

In re Apache Corp. Securities Litigation

Class Certification Hearing Direct Testimony of Lucy P. Allen

Section 1: Assignment, Summary of Findings, and Background

Assignment & Qualifications

1. **What was your assignment in this case?**
 - a. I was asked to analyze whether there is price impact during the period from February 23, 2018 and March 13, 2020 (the “Focus Period”) from any of the alleged misrepresentations made during the alleged “Class Period” (the period between September 7, 2016 and March 13, 2020).
2. **Were you asked to do anything else?**
 - a. Yes. I was asked to review and comment on the Reply Report of Zachary Nye, Ph.D., dated August 11, 2023 (the “Nye Reply Report”).
3. **Could you briefly describe your qualifications?**
 - a. My qualifications and testifying experience are set out in my first report. [Exhibit 2, Allen Report, ¶¶7-8]

Summary of Findings

4. **Are you contesting that the market for Apache’s stock was efficient during the alleged Class Period?**
 - a. No, I am not.
5. **Are you contesting price impact during the part of the alleged Class Period that precedes the Focus Period?**
 - a. No, I am not.
6. **What are your findings?**
 - a. I find that there is no price impact and no link between any of the alleged misrepresentations made during the alleged Class Period and Apache’s stock price during the Focus Period.

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7. **When you say “any of the alleged misrepresentations,” are you talking about only those during the Focus Period?**
 - a. No, not just those during the Focus Period. I find no price impact and no link between any of the 26 alleged misrepresentations (on 17 dates) made *before* the Focus Period and any of the 15 alleged misrepresentations (on 15 dates) made *during* the Focus Period and Apache’s stock price during the Focus Period.
8. **What do you mean by “no link”?**
 - a. The revelation of the supposed truth regarding any of the alleged misrepresentations made during the alleged Class Period (including those made before the Focus Period) did not cause Apache’s stock price to go down at any time during the Focus Period and the alleged misrepresentations made during the Focus Period did not cause Apache’s stock price to go up when made.
9. **What is the basis for this finding? Can you highlight your main reasons?**
 - a. A detailed analysis of each of the three alleged partial corrective disclosures that Plaintiffs claim were made during the Focus Period (April 23, 2019, October 25, 2019, and March 16, 2020) shows no price impact from any of the alleged misrepresentations made during the alleged Class Period. In other words, I find that there is no price decline during the Focus Period that can be linked to any of the alleged misrepresentations made at any time during the alleged Class Period.
 - b. There is no statistically significant decline in Apache’s stock price caused by the correction of any of the alleged misrepresentations made during the alleged Class Period (those preceding the Focus Period and those made during the Focus Period).
 - c. Analysts’ valuations and commentary demonstrate that there is no price impact from the alleged misrepresentations. After each of the alleged corrective disclosures, none of the analysts indicate that they are changing their valuation of

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Apache or that Apache's stock price has changed because of information corrective of the alleged misrepresentations. Instead, analyst and market commentary affirmatively indicates that what was announced on the alleged corrective disclosures was expected or that price movements after the alleged corrective disclosures were due to information unrelated to Alpine High.

- d. In addition, for each of the alleged misrepresentations made during the Focus Period, I analyzed the stock price reaction and market and analyst commentary following each of the alleged misrepresentations and found no evidence of a price increase due to the alleged misrepresentations.

10. Before we get into detail, could you highlight your findings for each alleged corrective disclosure during the Focus Period? Let's start with the first one on April 23, 2019.

- a. On April 23, 2019, before market open, Apache issued a press release announcing a temporary deferral of its natural gas production at Alpine High in response to low commodity prices. [Dkt. No. 65, Complaint, ¶310 & Exhibit 13, April 23, 2019 *Apache Press Release*, p. 1]
 - i. First, there was no statistically significant price decline on April 23 according to Dr. Nye's event study model as well as my alternative event study model. Nor was there a statistically significant decline on any of the following three days.
 - ii. Second, consistent with the absence of a statistically significant price decline, the deferral was expected by the market given the drastic decline in gas prices in the weeks before April 23 – gas price declines which were well known by the market.
 - iii. Third, no analyst lowered their price target or valuation of Apache as a result of the alleged corrective disclosure.

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- iv. Fourth, no analyst indicated that this announcement contradicted something they previously thought or understood regarding the alleged misrepresentations.

11. Why would the announcement of a deferral of gas production at Alpine High not result in a statistically significant decline in Apache's stock price?

- a. In the weeks prior to Apache's April 23, 2019 announcement, there had been a drastic decline in the market gas prices that were particularly relevant to Alpine High, the Waha Hub natural gas price. In fact, the Waha Hub prices even went negative in late March 2019. Given these extremely low prices, the market expected a deferral in natural gas production at Alpine High – it was no longer economic to continue to produce gas at those market prices.

12. What about the second alleged corrective disclosure?

- a. On October 25, 2019, during market hours, media reports revealed that Steven Keenan, Apache's Senior Vice President of Worldwide Exploration, had resigned. [Dkt. No. 65, Complaint, ¶313 & Exhibit 25, October 25, 2019 *Bloomberg News* Article, p. 1]
 - i. First, even though there was a statistically significant price decline following the news of Mr. Keenan's resignation, it was not because the market learned anything new about Alpine High. In fact, there was no new information about Alpine High disclosed on this date.
 - ii. Second, no analyst indicated that the news about Mr. Keenan's resignation contradicted something they previously thought or understood regarding Alpine High or the alleged misrepresentations.
 - iii. Third, the timing of Mr. Keenan's resignation "spooked" investors because it occurred during Apache's drilling of its first exploratory well in Suriname, the Maka Central-1 well. Apache's Suriname well was "among

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the most anticipated wells in the world” (and thus very important to the valuation of Apache’s stock). [Exhibit 31, October 31, 2019 Credit Suisse Report, p. 5 & Exhibit 32, December 2, 2019 *Wall Street Journal* Article, p. 1] At the time of the alleged corrective disclosure, it was known that the Company was in the midst of drilling the well, with preliminary results expected around this date. The timing of Mr. Keenan’s resignation presaged a potentially negative outcome (or at least the lack of a positive outcome) from the Suriname well.

- iv. Fourth, every analyst and market commentator (on and after October 25) that I found who commented on Apache’s October 25 stock price decline explicitly attributed the price decline to Apache’s Suriname Maka Central-1 well.

13. What about the third alleged corrective disclosure?

- a. On March 16, 2020, a *Seeking Alpha* article was published allegedly disclosing how Alpine High had left Apache “particularly challenged amongst its E&P peers” and with high levels of debt. [Dkt. No. 65, Complaint, ¶315 & Exhibit 37, March 16, 2020 *Seeking Alpha* Article, p. 5]
- b. There are six main reasons.
 - i. First, there was no new news about Alpine High (or about Apache) within the *Seeking Alpha* article.
 - ii. Second, no analyst or news story mentioned the *Seeking Alpha* article, let alone tied it to any price drop.
 - iii. Third, Plaintiffs now appear to be claiming a Susquehanna analyst report issued on this same date is also an alleged corrective disclosure of the alleged misrepresentations. However, the Susquehanna report also does

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not have any new news about Alpine High and does not even mention Alpine High.

- iv. Fourth, the Susquehanna report was an industry report, not an Apache-specific report, that lowered “price targets across [its] coverage universe,” including for Apache, because of market and industry wide factors in the wake of a recent industry “price shock.” [Exhibit 38, March 16, 2020 Susquehanna Report, pp. 1-2]
- v. Fifth, an event study on this date would be uninformative about price impact of the alleged misrepresentations since no new news about Alpine High was released. Any attempt to do an event study would have to adjust for the record-high volatility on this date that occurred after the onset of the COVID-19 pandemic.
- vi. Sixth, it appears that Plaintiffs may have chosen this date to be an alleged corrective disclosure date not because they found something actually corrective of the alleged misrepresentations on this date, but instead because there was a large drop in Apache’s stock price. This day was a particularly volatile day for the market with many dramatic changes in stock prices of many companies as the beginning of the COVID-19 pandemic unfolded. Although there was a large price movement on this day, there was no Apache-specific news.

14. Other than what you have just explained about what happened at the alleged corrective disclosures and the alleged misrepresentations during the Focus Period, are there any other main reasons behind your findings?

- a. Yes, I find that the market did not change its view about Alpine High’s reserves or the mix of dry gas vs. wet gas and oil reserves during the Focus Period (including after the alleged corrective disclosures).

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Background

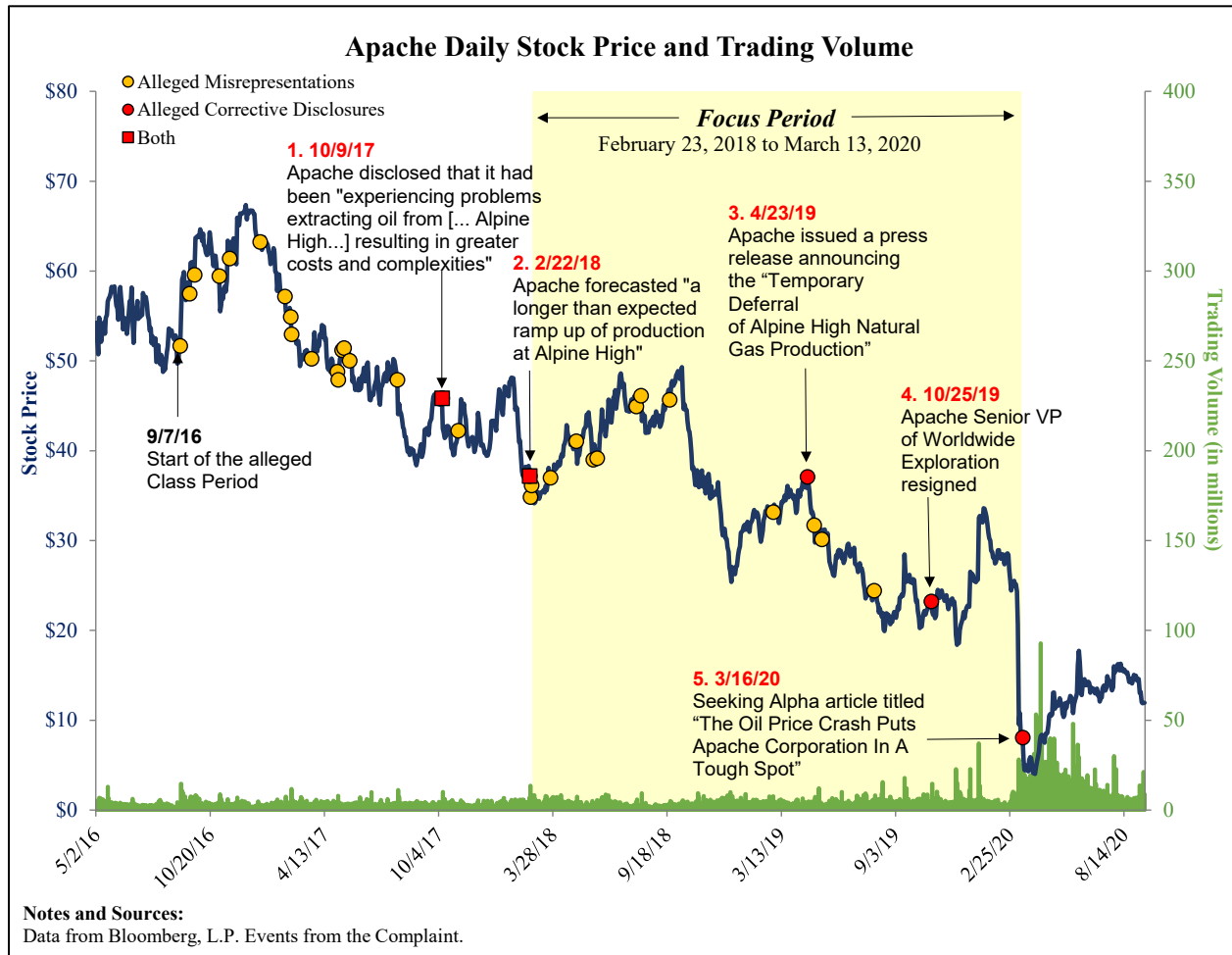
15. **Can you briefly describe your understanding of the allegations in this case?**
- a. Plaintiffs allege that Apache made numerous misrepresentations about the Alpine High resource play that impacted and inflated the Company's stock price during the alleged Class Period. Based on the Complaint, which discusses each of the alleged misrepresentations over 34 pages, in brief, I understand Plaintiffs allege that Apache "touted Alpine High as a 'transformational discovery' and 'world class resource play' with immense production capabilities," and concealed that "the Alpine High area was 'too gassy' to ever be viable – i.e., too heavy on unprofitable 'dry' gas and too light on valuable oil and 'wet' gas." [Dkt. No. 65, Complaint, ¶¶1,4] I also understand Plaintiffs claim Apache made misstatements about Alpine High being economic at low commodity prices. [Dkt. No. 65, Complaint, ¶¶224-226, 244-245, 256-257, 260]
 - b. In Dr. Nye's deposition, he testified that there were four categories of alleged misrepresentations: 1) Alpine High's mix of dry gas vs wet gas and oil reserves, 2) the overall volume of Alpine High's reserves, 3) Alpine High's ability to be profitable at low commodity prices, and 4) Alpine High being a "transformational discovery." [Exhibit 44, Nye Deposition, 137:17-138:11] I do not have any reason to disagree with these categories.
 - c. Figure 1 below shows Apache's stock price and trading volume around the alleged Class Period, including the Focus Period, along with the alleged misrepresentations dates and the alleged corrective disclosures.

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Figure 1



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Section 2: Alleged Misrepresentations

Alleged Misrepresentations

16. **You mentioned that the alleged misrepresentations made during the Focus Period did not cause an increase in Apache's stock price when made. How did you come to this conclusion?**
- a. I analyzed the stock price reaction and market and analyst commentary following each of the alleged misrepresentations made during the Focus Period and found no evidence of a price reaction. [Exhibit 2, Allen Report, ¶¶35-45 & Exhibit 4, Allen Surreply Report, ¶20]
 - b. With the exception of one date (August 1, 2019), I found that there is no statistically significant price increase after any of the alleged misrepresentations made during the Focus Period. That one date, August 1, 2019, corresponds to the last two alleged misrepresentations (one occurred on July 31, 2019 after market hours and the other on August 1, 2019 during market hours).
 - c. For all of the alleged misrepresentations during the Focus Period, I examined potential negative confounding news and found that there is no indication that any analyst increased their price target or valuation of Apache due to those alleged misrepresentations. Figure 2 below summarizes these findings.
 - i. Figure 2 below shows each alleged misrepresentation date during the Focus Period, each reaction date following the alleged misrepresentation (reactions in Apache's stock price would have occurred only on 13 different trading days because events occurring after market hours would be reflected in Apache's stock price on the next trading day), Apache's stock price reaction on the reaction date using Dr. Nye's event study model, and Apache's stock price reaction on the reaction date using my alternative event study model.

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- ii. Note my alternative event study is similar to Dr. Nye's, except that it uses a different index to control for industry movements and generally has a higher explanatory power than Dr. Nye's event study. In particular, my alternative event study uses the S&P Oil & Gas Exploration & Production Select Industry Index and Dr. Nye's event study uses an index based on the S&P 500 Oil & Gas Exploration and Production Index to control for industry movements. [Exhibit 2, Allen Report, ¶¶32-33] However, my finding of no price impact and no link between any of the alleged misrepresentations made during the alleged Class Period and Apache's stock price during the Focus Period does not depend on which event study model is used. [Exhibit 2, Allen Report, ¶¶36-38, 48, 51, 64-65, 76]

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Apache Stock Price Reactions Following Alleged Misrepresentations							
Event Date	Reaction Date	Event	Nye Event Study		Alternative Event Study		
			% Price Reaction	Stat. Sig. Increase? ¹	% Price Reaction	Stat. Sig. Increase? ¹	
1. 2/22/18 ²	2/23/18	2017 Form 10-K	0.4%	No	1.1%	No	
2. 2/26/18	2/26/18	DUG Executive Conference	-0.6%	No	-0.9%	No	
3. 3/26/18	3/26/18	Investor Presentation	-1.6%	No	-1.4%	No	
4. 5/3/18	5/3/18	1Q18 Conference Call	-5.3%	No	-4.4%	No	
5. 5/30/18	5/30/18	Annual Bernstein Strategic Decisions Conference	0.5%	No	0.6%	No	
6. 6/5/18	6/5/18	June Marketing Presentation	1.1%	No	0.6%	No	
7. 8/2/18	8/2/18	2Q18 Conference Call	-1.4%	No	-1.5%	No	
8. 8/8/18	8/9/18	Conference Call to Discuss Altus Transaction	-5.8%	No	-5.4%	No	
9. 9/21/18	9/21/18	Bloomberg Commodities Edge Interview	-0.4%	No	-0.4%	No	
10. 2/28/19	3/1/19	2018 Form 10-K	0.2%	No	0.4%	No	
11. 5/1/19 ³	5/2/19	1Q19 Press Release	-3.5%	No	-3.2%	No	
12. 5/2/19	5/2/19	1Q19 Conference Call	-3.5%	No	-3.2%	No	
13. 5/14/19 ⁴	5/14/19	Bloomberg Story	1.3%	No	0.4%	No	
14. 7/31/19 ⁵	8/1/19	2Q19 Press Release	3.6%	Yes	4.8%	Yes	
15. 8/1/19	8/1/19	2Q19 Conference Call	3.6%	Yes	4.8%	Yes	

Notes and Sources:

Data from Bloomberg L.P. and "NYSE_00003032.xlsx." Events from the Complaint.

¹ Significance is based on the price reaction's t-statistic, calculated as the price reaction divided by the standard error of the regression over the control period. "Yes" indicates that the price increase is statistically significant at the 5% level.

² The Complaint states that the 2017 Form 10-K was filed on February 23, 2018 (Complaint ¶258); however, according to SEC's website it was filed on February 22, 2018 after market hours.

³ The Complaint states that the press release was issued on May 2, 2019 (Complaint ¶273-274); however, according to a GlobeNewswire article dated May 1, 2019, the press release was issued on May 1, 2019 after market hours.

⁴ The Complaint states that the Bloomberg story was published on May 15, 2019 (Complaint ¶275); however, according to Bloomberg, it was published on May 14, 2019.

⁵ The Complaint states that the press release was issued on August 1, 2019 (Complaint ¶278-279); however, according to a GlobeNewswire article dated July 31, 2019, the press release was issued on July 31, 2019 after market hours.

17. **What about the statistically significant price increase on August 1, 2019, after the alleged misrepresentations in Apache's 2Q19 press release and conference call? Isn't that evidence of the alleged misrepresentations moving Apache's stock price up?**

- a. No, it is not. I reviewed market and analyst commentary following these alleged misrepresentations and found no evidence that the price increase was due to the alleged misrepresentations. Instead, the market and analyst commentary attributed

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the price increase to positive financial and production news unrelated to the alleged misrepresentations, including Apache's 2Q19 earnings results beating consensus. [Exhibit 2, Allen Report, ¶¶38-42]

18. **Does Dr. Nye have any response to your analysis of each of the alleged misrepresentations during the Focus Period?**
 - a. Dr. Nye agrees with my analysis that found no evidence of a price reaction to the alleged misrepresentations when made. [Exhibit 44, Nye Deposition, 87:9-21]

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Section 3: Alleged Corrective Disclosure #1: April 23, 2019

Alleged Corrective Disclosure #1: April 23, 2019

19. **Let's move on to your analysis of the alleged corrective disclosures. What did you find?**
 - a. I found that a detailed analysis of each of the three alleged partial corrective disclosures that Plaintiffs claim were made during the Focus Period (April 23, 2019, October 25, 2019, and March 16, 2020) shows no price impact from any of the alleged misrepresentations made during the alleged Class Period. In other words, I found that there is no price decline during the Focus Period that can be linked to any of the alleged misrepresentations made at any time during the alleged Class Period.
20. **Let's walk through your analysis of each of those three alleged corrective disclosures. Let's start with the first alleged corrective disclosure on April 23, 2019. What is the first alleged corrective disclosure during the Focus Period?**
 - a. According to Plaintiffs, Apache's announcement of the temporary deferral of natural gas production at Alpine High on April 23, 2019 is allegedly corrective of the alleged misrepresentations. Plaintiffs point to a price decline on April 23, 2019 and over the next three trading days, April 24, 25, and 26. [Dkt. No. 65, Complaint, ¶¶310-311 & Exhibit 13, April 23, 2019 *Apache Press Release*, p. 1]
21. **What was your finding regarding whether the April 23, 2019 alleged corrective disclosure was evidence of price impact from any of the alleged misrepresentations?**
 - a. I found that the market and price reaction after the April 23, 2019 alleged corrective disclosure shows no price impact from any of the alleged misrepresentations made during the alleged Class Period.

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Section 3: Alleged Corrective Disclosure #1: April 23, 2019

22. **Before we get into the details, could you highlight the reasons that neither the market reaction nor the price reaction after the April 23, 2019 alleged corrective disclosure shows any price impact from any of the alleged misrepresentations made during the alleged Class Period?**

a. There are four main reasons.

- i. First, there was no statistically significant price decline on April 23 according to both Dr. Nye's event study model as well as my alternative event study model. In addition, there was no statistically significant price decline on any of the following three days: April 24, 25, and 26.
- ii. Second, this lack of price movement is consistent with the fact that the deferral was expected by the market given the drastic decline in gas prices in the weeks before April 23.
- iii. Third, no analyst lowered their price target or valuation of Apache as a result of the alleged corrective disclosure.
- iv. Fourth, no analyst indicated that this announcement contradicted something they previously thought or understood regarding the alleged misrepresentations.

Reason #1

23. **Let's discuss the first reason. You mentioned that there is no statistically significant reaction in Apache's stock price on April 23, 24, 25, or 26, 2019. But didn't Dr. Nye claim there is a statistically significant reaction associated with this alleged corrective disclosure?**

- a. Dr. Nye makes this claim by arbitrarily expanding his statistical test to count three or four days even when no individual day is statistically significant. [Exhibit 2, Allen Report, ¶¶49-51, Exhibit 4, Allen Surreply Report, ¶34 & Exhibit 1, Nye Report, p. 275]

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Section 3: Alleged Corrective Disclosure #1: April 23, 2019

- b. In other words, Dr. Nye combines Apache's returns over several days (three-days – April 23-25 and four-days – April 23-26). He finds that according to his event study model, Apache's combined returns over the two days are not statistically significant, while the combined returns over three days and four days are statistically significant. Using my alternative event study model, Dr. Nye finds that Apache's combined returns over the two days and three days are not statistically significant, and only over four days are the combined returns statistically significant (See Figure 3 below). [Exhibit 3, Nye Reply Report, ¶23 & Exhibit 4, Allen Surreply Report, ¶34]
 - c. Dr. Nye's statistical tests are unscientific and non-standard, contradict his own event study method, and appear to be nothing more than results-driven.
24. **So Dr. Nye combines Apache's returns over multiple days and only then finds the combined return to be significant?**
- a. Right, no individual day is statistically significant. More importantly, the price reaction on April 23, 2019, the date on which the allegedly corrective information was revealed before the market even opened, is not statistically significant (non-statistically significant t-statistics are circled in red in Figure 3 below). Dr. Nye agrees with this. [Exhibit 13, April 23, 2019 Press Release, p. 1, Exhibit 3, Nye Reply Report, ¶23 & Exhibit 44, Nye Deposition, 71:17-76:12]
 - b. The market had a full day to impound the allegedly corrective information for the event study on April 23.
 - c. Dr. Nye's combined return for two days is not statistically significant under either event study model.
 - d. Dr. Nye's combined returns for three days is not statistically significant under my alternative event study model.

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Nye Reply Report Table for April 23, 2019 Alleged Corrective Disclosure						
Event Window	Nye Event Study			Allen Alternative Event Study		
	Company-Specific Return	t-Stat	Confidence Level	Company-Specific Return	t-Stat	Confidence Level
4/23/2019	-1.45%	-1.05	70.64%	-1.37%	-0.99	67.77%
4/24/2019	-2.04%	-1.48	86.06%	-0.75%	-0.54	41.28%
4/25/2019	-2.67%	-1.94	94.62%	-2.47%	-1.78	92.38%
4/26/2019	-1.01%	-0.73	53.29%	-1.31%	-0.94	65.11%
2-Day Event Window (4/23-24/2019)	-3.49%	-1.79	92.58%	-2.13%	-1.09	72.12%
3-Day Event Window (4/23-25/2019)	-6.16%	-2.58	98.96%	-4.60%	-1.91	94.33%
4-Day Event Window (4/23-26/2019)	-7.17%	-2.60	99.01%	-5.91%	-2.13	96.56%

Source: Nye Report Exhibit 11; NERA_019129

25. **Do Dr. Nye or Plaintiffs claim that there was new fraud-related information released on April 24, 25 or 26?**
- a. No, neither Plaintiffs nor Dr. Nye are claiming this. [Exhibit 44, Nye Deposition, 85:21-86:3]
26. **Have you or Dr. Nye ever done what Dr. Nye has done in this case (*i.e.*, used a statistical test that combines returns over four-days where no individual day is statistically significant) in a securities class action based on a market efficiency claim?**
- a. No, I have not done this, nor to my knowledge has Dr. Nye. I have also not seen any academic literature, and Dr. Nye has not pointed to any, that supports what Dr. Nye has done in this case. [Exhibit 44, Nye Deposition, 76:22-77:3]
27. **Dr. Nye says you did this in the *Beckel v. Fagron Holdings USA, LLC* (“*Fagron*”) case though. What’s your response?**
- a. Dr. Nye claims I used the same multi-day statistical test that he uses here in the *Fagron* case. However, unlike Apache’s price reactions on April 23, 24, 25 and

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Section 3: Alleged Corrective Disclosure #1: April 23, 2019

26, the individual one-day price reactions in the *Fagron* case were all statistically significant.

- b. In situations such as this with a market efficiency claim, for many years, it has been my standard practice, as well as the standard practice at NERA to continue the price reaction over an additional day only if each individual day had a statistically significant price reaction (and there is no confounding news). Note I have also seen other economic experts, including experts for Plaintiffs, conform with this same practice. (For example, the most recent Plaintiffs-side expert report I have received – two weeks ago by W. Scott Dalrymple – used this practice.) But Apache’s price reactions were not statistically significant on the first day, or any of the individual days from April 23 to April 26.
 - c. Moreover, unlike this case, the *Fagron* case was not a securities class action, there was no fraud-on-the-market theory, and no claim of market efficiency. [Exhibit 3, Nye Reply Report, ¶22, Exhibit 4, Allen Surreply Report, footnote 55 & Exhibit 70, Allen Fagron Report, ¶¶21-25]
28. **Dr. Nye appears to claim the April 23 announcement is different from other dates when news about Apache came out, as the market was still “grappling” with the information disclosed on April 23 four days after the announcement. What is your response?**

- a. That is an unsupported and unscientific claim. The April 23 alleged corrective disclosure was in a press release issued by the Company, not a news story published in some obscure newspaper or a rumor that was floating around. Moreover, the information in the alleged corrective disclosure was information analysts were familiar with and had spent a lot of time examining, not some new, complex information that somehow would take more than the usual amount of time to digest. Hence, there is no basis for Dr. Nye’s implication that the market needed four days after the announcement to impound the information. [Exhibit

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13, April, 23, 2019 *Apache Press Release*, p. 1 & Exhibit 44, Nye Deposition, 96:5-15]

29. **In his deposition, Dr. Nye pointed to the fact that one analyst report (Cowen) was issued on April 26, 2019 and another (Barclays) on April 28, 2019 as support for his use of a four-day combined statistical test. What is your response to that?**
- a. Given that there was no statistically significant reaction in Apache's stock price on April 23, 24, 25, or 26, it is unclear how the publication of these analyst reports is supportive of Dr. Nye's claim. [Exhibit 4, Allen Surreply Report, ¶¶34-36]
 - b. The Cowen analyst report issued on April 26, 2019 was a report on the entire E&P industry focused on previewing 1Q19 results, and thus was not issued in response to Apache's announcement of the deferral. Moreover, the Cowen report did not change Apache's price target or stock rating and attributed the deferral at Alpine High to weak Waha gas pricing. [Exhibit 18, April 26, 2019 Cowen Report, p. 1]
 - c. The April 28, 2019 Barclays analyst report was not even issued during Dr. Nye's four-day window but instead was issued six days after the April 23 alleged corrective disclosure. The Barclays report left Apache's price target, stock rating, and industry view unchanged. Moreover, the Barclays report attributed the deferral to weak Waha pricing and noted that the deferral had "a minimal effect on total production." [Exhibit 19, April 28, 2019 Barclays Report, p. 1]
30. **In his deposition, Dr. Nye claimed that "it's actually very rare to see two-, three- and really rare to see four- consecutive declines." What is your response to that?**
- a. Dr. Nye's own data and analysis do not support his claim. According to Dr. Nye's data, three- or four-day consecutive declines occur frequently during the alleged Class Period. Demonstrative 1 is a replication of Dr. Nye's Exhibit 11B, which

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shows Apache's excess returns (*i.e.*, returns after adjusting for market and industry effects) on each day during the alleged Class Period. I added two columns at the end: the first column highlights all three-day consecutive excess return periods and the second column highlights all four-day consecutive excess return periods.

- b. As Demonstrative 1 shows, just looking at the excess returns on each day, one would not be able to identify the three or four days after the April 23 alleged corrective disclosure as particularly unusual. According to Dr. Nye's data and analysis, 32% of the trading days during the alleged Class Period were in a three-day consecutive excess return decline window and 21% were in a four-day consecutive excess return decline window. [Exhibit 44, Nye Deposition, 70:3-71:16 & Exhibit 1, Nye Report, pp. 281-301]

31. You mentioned that Dr. Nye's statistical tests contradict his event study method. How?

- a. In his first report, Dr. Nye used one-day statistical tests in his event studies. [Exhibit 1, Nye Report, pp. 304-305] Further, Dr. Nye testified that using one-day statistical tests is his standard methodology. [Exhibit 44, Nye Deposition, 69:4-12] However, contrary to his standard one-day methodology, Dr. Nye uses a non-standard statistical test of combining returns over four days for the April 23 alleged corrective disclosure. [Exhibit 1, Nye Report, pp. 304-305, Exhibit 3, Nye Reply Report, ¶23 & Exhibit 4, Allen Surreply Report, ¶36]

32. Does Dr. Nye have any academic support for his statistical test that combines returns over four days?

- a. Dr. Nye cites to some academic literature as purported support, but the literature does not actually support Dr. Nye's method and analysis. This further demonstrates the unscientific and results-oriented nature of Dr. Nye's analysis.

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[Exhibit 3, Nye Reply Report, ¶¶70-75 & Exhibit 4, Allen Surreply Report, footnote 59]

33. Could you give me some examples of how Dr. Nye’s cited academic literature does not support his statistical test that combines returns over four days?

- a. For instance, Dr. Nye cites to a MacKinlay paper to support his statistical test. However, the paper explicitly states that the reason one would combine returns over two days is because “it captures the price effects of announcements which occur after the stock market closes on the announcement day.” Thus, the MacKinlay paper does not support Dr. Nye’s statistical test since the allegedly corrective information on April 23, 2019 came out before the market opened, and it would not support using a three- or four-day combined statistical test. [Exhibit 4, Allen Surreply Report, ¶37, Exhibit 3, Nye Reply Report, ¶73 & Exhibit 58, MacKinlay Paper, pp. 13, 15]
- b. Dr. Nye cites to a Zhang paper to claim that his statistical test is reliable and scientific. However, the paper states that the returns of high-uncertainty stocks (such as Apache, according to Dr. Nye) are predictable, which would directly violate Dr. Nye’s finding of market efficiency. [Exhibit 4, Allen Surreply Report, footnote 59, Exhibit 3, Nye Reply Report, ¶71 & Exhibit 62, Zhang Paper, p. 106]
- c. Dr. Nye cites to papers by Dow and Gorton, Kyle, and Grossman and Stiglitz to argue that asset pricing theory supports his statistical test. These papers are completely theoretical works on complex trading patterns between informed and uninformed traders and thus do not support Dr. Nye’s empirical statistical test that combines returns over four days. Moreover, for example, Dow and Gorton’s theoretical modeling finds that “[t]he pattern of price response over time may be so complicated that there is no apparent relationship between the arrival of new information and the price” – something that would completely negate Plaintiffs’ theory of reliance and “fraud-on-the-market” theory. [Exhibit 4, Allen Surreply

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Report, ¶¶36-37, Exhibit 3, Nye Reply Report, ¶71, Exhibit 49, Dow and Gorton Paper, pp. 639, Exhibit 57, Kyle Paper, pp. 1315-1335 & Exhibit 54, Grossman and Stiglitz Paper, pp. 393-408]

34. **Are you aware of a court decision that has addressed what Dr. Nye has done here (*i.e.*, used a four-day combined statistical test when no individual day was statistically significant)?**
- a. No, I have not seen that before.
 - b. I have seen a court address a two-day combined statistical test when the first day was not statistically significant. The court in *Ramirez v. Exxon Mobil Corp.* concluded that the use of a combined two-day window was “unsuitable” since the stock traded in an efficient market and there was no new information released on the second day. [Exhibit 69, *Exxon* Decision, pp. 36, 52 & Exhibit 4, Allen Surreply Report, ¶38] In this case, Dr. Nye claims that Apache’s stock traded in an efficient market, and there was no new information released on the second, third or fourth day. [Exhibit 1, Nye Report, ¶70 & Exhibit 44, Nye Deposition, 85:21-86:13]
35. **What would happen to Dr. Nye’s market efficiency analysis if you apply the four-day statistical tests from his Reply Report?**
- a. You would get completely different results. Using his non-standard test that combines returns over four days, Apache’s stock would fail Dr. Nye’s market efficiency test.
 - i. The majority of the “event” days Dr. Nye found to be significant would no longer be significant, contradicting his own finding of market efficiency.
 - ii. Dr. Nye would have to conclude that Apache’s stock price reacted similarly on “non-event” dates as on “event” dates, and that the stock fails

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his own test of market efficiency. [Exhibit 4, Allen Surreply Report, ¶¶42-45]

36. What do you mean by an “event” day?

- a. In his first report, Dr. Nye performs a “cause-and-effect relationship” test using an event study to analyze whether Apache’s stock traded in an efficient market during the alleged Class Period.
- b. This involves testing Apache’s stock price reactions on “event” dates – which Dr. Nye defines as dates when Apache released quarterly or yearly financial results and/or financial guidance – and “non-event” dates. [Exhibit 1, Nye Report, ¶¶57-59]
- c. Based on exclusively one-day event windows, Dr. Nye finds that nine out of 14 “event” dates are associated with a statistically significant reaction.
 - i. Dr. Nye then tests whether there are differences between the price reactions on “event” dates and “non-event” dates and finds that there “exists a higher probability of observing statistically significant Company-specific returns (at or above the 95% confidence level) on event dates during the Class Period.” [Exhibit 1, Nye Report, footnote 114]

37. You said that if one applies Dr. Nye’s non-standard statistical test to his market efficiency analysis, over half of the “event” days Dr. Nye analyzed and found to be significant in his first report would no longer be significant?

- a. Right, only three out of 14 “event” days would be statistically significant, whereas Dr. Nye had originally found, using a one-day return, that nine out of 14 “event” days were statistically significant (shown in Figure 4 below). [Exhibit 4, Allen Surreply Report, ¶¶41-43]

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1-Day v. 4-Day Event Window Price Reactions For Nye's Event Dates using Nye's Model									
Nye's Event Date	Reaction Date	Earnings Release Period	Alleged Misrep.?	1-Day		4-Day		Still	
				t-stat.	Stat. Sig.? ¹	t-stat.	Stat. Sig.? ¹	Stat. Sig.? ²	
1.	11/3/16	11/3/16	3Q16	Yes	-4.47	Yes	-2.00	Yes	Yes
2.	2/23/17	2/23/17	FY16	Yes	-2.78	Yes	-1.22	No	No
3.	5/4/17	5/4/17	1Q17	Yes	0.44	No	1.62	No	-
4.	8/3/17	8/3/17	2Q17	Yes	-3.93	Yes	-2.27	Yes	Yes
5.	11/2/17	11/2/17	3Q17	Yes	-0.81	No	1.60	No	-
6.	2/22/18	2/22/18	FY17	Yes	-7.10	Yes	-3.99	Yes	Yes
7.	5/2 & 5/3/18	5/3/18	1Q18	Yes	-4.58	Yes	-1.73	No	No
8.	8/1 & 8/2/18	8/2/18	2Q18	Yes	-1.12	No	1.92	No	-
9.	10/31 & 11/1/18	11/1/18	3Q18	No	-4.04	Yes	-1.10	No	No
10.	2/27 & 2/28/19	2/28/19	FY18	Yes	0.23	No	0.01	No	-
11.	5/1 & 5/2/19	5/2/19	1Q19	Yes	-2.51	Yes	-0.82	No	No
12.	7/31 & 8/1/19	8/1/19	2Q19	Yes	2.57	Yes	1.78	No	No
13.	10/30 & 10/31/19	10/31/19	3Q19	No	0.60	No	0.97	No	-
14.	2/26 & 2/27/20	2/27/20	FY19	No	3.51	Yes	1.00	No	No
No. Stat. Sig. Days:					9			3	
% of Stat. Sig. Days:					64%			21%	

Notes and Sources:
 Data from the Nye Report and Dr. Nye's Turnover.
¹ Significance for 1-day is based on the price reaction's t-statistic, calculated as the price reaction divided by the standard error of the regression over the sample period. Significance for 4-day is based on Dr. Nye's methodology. "Yes" indicates that the price reaction is statistically significant at the 5% level.
² "Yes" indicates that both the 1-day and 4-day price reactions are statistically significant at 5% level. "No" indicates that the 1-day price reaction is statistically significant at 5% level but the 4-day price reaction is not.

- b. Moreover, using Dr. Nye's own test from his initial report to analyze whether there are differences between the price reactions on "event" dates vs. "non-event" dates, Dr. Nye would find that Apache's stock price reacted similarly on "non-event" dates as on "event" dates, and that the stock fails his own test of market efficiency. [Exhibit 4, Allen Surreply Report, ¶42]

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38. **Are there any other ways in which Dr. Nye’s non-standard statistical test contradicts his findings from his first report?**
- a. Yes. Dr. Nye’s analysis of the reasons Apache’s stock moved (or did not move) on “event” days would no longer make sense if one were to apply his non-standard statistical test combining returns over four days.
39. **Could you elaborate?**
- a. In Dr. Nye’s first report, he outlines the specific reasons why the results of his event study (*i.e.*, either a statistically significant reaction or not) are consistent with the news that was announced on each of his “event” days. [Exhibit 1, Nye Report, ¶59 and pp. 303,682]
- b. However, using his non-standard statistical test, the majority of his “event” days would no longer be statistically significant, and thus his analysis of the reasons Apache’s stock moved would no longer make sense. [Exhibit 4, Allen Surreply Report, ¶42]
40. **Could you give me an example of one of the “event” days where Dr. Nye’s initial analysis no longer makes sense?**
- a. For instance, on February 23, 2017, according to Dr. Nye’s initial report, there was a statistically significant decline in Apache’s stock price.
- b. However, applying Dr. Nye’s arbitrary statistical test combining returns over two, three, and four days, the combined stock price decline over those days is no longer statistically significant. [Exhibit 4, Allen Surreply Report, ¶44]
- c. Nevertheless, Dr. Nye claims that “the statistically significant decline on February 23, 2017 is consistent with that expected in an efficient market,” which would completely contradict the finding according to his new methodology using the combined returns over two, three, and four days. [Exhibit 1, Nye Report, p. 362]

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- d. Specifically, Dr. Nye's statement below regarding this date would no longer be true using the combined returns over two, three, and/or four days:

Given that (i) Apache's earnings and EBITDA were lower than expectations due to lower liquids volumes and price realizations than expected"; and (ii) the Company provided a "much weaker than anticipated outlook for 2017 volumes and cash flows," the statistically significant Company-specific stock price decline on February 23, 2017 is consistent with that expected in an efficient market." [Exhibit 1, Nye Report, p. 362]

41. **Dr. Nye called your application of his four-day statistical test to his market efficiency analysis "silly" because you did not look at what happened over the four days after any of the event days. What is your response?**
- a. I am simply using Dr. Nye's own test of market efficiency, a test which itself does not examine what happened over the "event" days or "non-event" days. In his test, Dr. Nye categorizes as "event" days any days on which "Apache released quarterly or year-end financial results and/or financial guidance," regardless of whether that information was unexpected or if there was any confounding information. Dr. Nye categorizes as "non-event" days any other days, regardless of what information came out on those days. Thus, Dr. Nye's own test does not examine what happened over the "event" days or "non-event" days. [Exhibit 44, Nye Deposition, 89:20-90:15, Exhibit 1, Nye Report, ¶57]
- b. I use Dr. Nye's own test of market efficiency, including using the same "events" and "non-events." The only difference is that instead of using the standard one-day statistical tests that he uses in his first report, I use the non-standard four-day statistical tests that he suggests using for the April 23 alleged corrective disclosure in his reply report.

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42. **Can you briefly sum up your findings regarding the April 23, 2019 alleged corrective disclosure, so far?**
- a. I found that there was no statistically significant decline in Apache's stock price on April 23, 2019 or on any of the following three days, and Dr. Nye's four-day statistical test is non-standard, unscientific, and contradicts his own findings. If Dr. Nye had applied his four-day statistical test to his test of market efficiency, he would find that Apache's stock fails the test.
43. **Dr. Nye claims that the lack of a statistically significant reaction is not evidence of no price impact. What is your response to that?**
- a. So I have several responses, including that Dr. Nye's claim is incorrect, contradicts the very methodology Dr. Nye uses to establish reliance through the indirect test of market efficiency, and calls into question how Dr. Nye's proposed common damages methodology could even work. [Exhibit 3, Nye Reply Report, ¶¶21-22, 61, 67-69 & Exhibit 4, Allen Surreply Report, ¶¶22-23]
44. **Dr. Nye claims the lack of a statistically significant price reaction cannot be evidence of no price impact because this is the nature of statistics. Can you give me an example in a different realm where the lack of a statistically significant result does provide important evidence and inform decision-making?**
- a. Sure, one example is the FDA's approval requirement for trials on drug efficacy.
- b. If a statistical test of the hypothesis that a drug is more effective than a placebo fails at the 5% statistical significance level, then the drug is rejected. The lack of statistical significance provides evidence that the drug is not better than a placebo. [Exhibit 4, Allen Surreply Report, ¶26, Exhibit 2, Allen Report, ¶31 & Exhibit 56, Kennedy-Shaffer Paper, pp. 595-635]

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45. **Can you give me an example from court decisions that indicates that the lack of a statistically significant reaction does provide evidence of no price impact?**
- a. For example, the court in *Ramirez v. Exxon Mobil Corp.* concluded that defendants had shown no price impact for an alleged corrective disclosure by showing the lack of a statistically significant reaction at the 5% significance level. [Exhibit 69, *Exxon* Decision, pp. 31, 38 & Exhibit 4, Allen Surreply Report, ¶¶27, 64]
 - b. As another example, the court in *Erica P. John Fund, Inc. v. Halliburton Company*, found that the lack of a statistically significant reaction provided evidence of no price impact for an alleged corrective disclosure. [Exhibit 2, Allen Report, footnote 36 & Exhibit 66, *Halliburton* Decision, pp. 16, 32]
46. **Can you give me an example from academic literature indicating that the lack of a statistically significant reaction does provide evidence of no price impact?**
- a. One example is a study in the *International Journal of Economics and Finance* which concludes there is no impact from an event given the lack of a statistically significant reaction. [Exhibit 2, Allen Report, footnote 35 & Exhibit 45, Abdeldayem and Nekhili Paper (“Credit Rating Changes and Stock Market Reaction in the Kingdom of Bahrain,”), pp. 23-32]
 - b. Another example is from a study a colleague and I published in the *International Journal of Business Accounting and Finance*. [Exhibit 46, Allen and Baez Paper (“The Short-Term Effect of Goodwill Impairment Announcements on Companies’ Stock Prices,”), pp. 59, 64]

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47. **Dr. Nye quotes the Reference Manual on Scientific Evidence to support his claim that the lack of a statistically significant price reaction is not evidence of no price impact. Dr. Nye quotes the following: “[w]hen a study with low power fails to show a significant effect, the results may therefore be more fairly described as inconclusive than negative. The proof is weak because power is low.” What is your response?**

- a. Dr. Nye ignores the sentence immediately following his quote from the Reference Manual, which directly contradicts his claim and supports the finding that the lack of a statistically significant reaction is evidence of no price impact: “On the other hand, when studies have a good chance of detecting a meaningful association, failure to obtain significance can be persuasive evidence that there is nothing much to be found.” And this is a situation where according to Plaintiffs’ claims the second sentence must apply. [Exhibit 3, Nye Reply Report, ¶67, Exhibit 2, Allen Report, ¶31, Exhibit 4, Allen Surreply Report, ¶27, & Exhibit 53, *Reference Guide on Statistics*, p. 254]
- b. Plaintiffs and Dr. Nye’s theories are predicated on the notion that an event study would have a “good chance of detecting a meaningful association,” and, in this context, if Dr. Nye’s event study yields no statistically significant price reaction, it would provide evidence of no price impact.
 - i. First, Plaintiffs and Dr. Nye’s proposed common damages methodology uses an event study to determine “Company-specific price movements caused by the revelation of true facts related to the alleged fraud” and measure the alleged damages.
 - ii. Second, Plaintiffs and Dr. Nye use his event study to prove that Apache’s stock price reacted to the type of information in the alleged misrepresentations and thus do not need to prove individualized reliance on the alleged misrepresentations.

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- iii. Third, if Dr. Nye is claiming single firm event studies have such low power that “the results may therefore be more fairly described as inconclusive than negative,” that claim is belied by the fact that event studies are the most common method used in securities litigation to measure damages and test price impact. [Exhibit 3, Nye Reply Report, ¶¶68, and Exhibit 4, Allen Surreply Report, ¶22]
- iv. Fourth, if Dr. Nye’s event study indeed has such low power that it does not have a “good chance of detecting a meaningful association,” then Dr. Nye’s proposed common damages methodology would not be able to measure damages on a class-wide basis. And in this situation the event study could not statistically distinguish the alleged price reaction to the April 23, 2019 alleged corrective disclosure from the estimation errors of his own event study model.

48. **Dr. Nye quotes from the decision in *Rooney v. EZCORP, Inc.* (“EZCORP”) to support his claim that the lack of a statistically significant reaction is meaningless. What is your response?**

- a. Dr. Nye quotes a statement from the EZCORP decision that says: “the absence of a statistically significant price adjustment does not show the stock price was unaffected by the misrepresentation.” However, that conclusion is based on a common misunderstanding of statistical significance. [Exhibit 3, Nye Reply Report, ¶¶21, 69]

49. **What is that common misunderstanding of statistical significance?**

- a. The EZCORP decision states the following (which was omitted from the quotes included from this decision in the Nye Reply Report):

“These p-values [0.23] suggest there is a 77 percent chance the corrective disclosures identified by Plaintiff negatively impacted EZCORP’s stock price on these dates.” [Exhibit 68, *EZCORP* Decision, p. 19]

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- b. In other words, the court believes that a p-value of 0.23 means that there is a 77% chance a significant event happened.
 - c. This is a common misunderstanding of statistical significance. A p-value of 0.23 does not mean that one is 77% confident that a significant event happened. Instead, it means that with no alleged corrective disclosure, there is only a 23% chance that a price reaction of the same magnitude or larger would be observed given the range of normal stock price volatility. [Exhibit 53, *Reference Guide on Statistics*, p. 250, Exhibit 4, Allen Surreply Report, ¶23 & Exhibit 2, Allen Report, ¶30]
50. **Can you help me understand why this interpretation of the p-value can't be the right one?**
- a. If a p-value of 0.23 meant that one is 77% confident that a significant event happened, then a p-value of 0.49 would mean that one is 51% confident that something happened, or that it is more likely than not that something happened.
 - b. Nobody says a p-value of 0.49 tells one that something is likely significant or that the test indicates that something happened. For example, there is a substantial amount of literature showing that academic papers are usually only published when a test's p-value is at or below 0.05, *i.e.*, significant at the 5% significance level (or 95% confidence level), the common standard for statistical significance. Nobody would say something is significant at the 50% significance level. [Exhibit 61, Simonsohn Paper, p. 666, Exhibit 51, Fanelli Paper, pp. 1-2 & Exhibit 59, Rosenthal Paper, p. 1] If the statement in the EZCORP decision were true, then academic papers with p-values below 0.5 (or significant at the 50% significance level) would be published.
 - c. As stated by the former president of the American Financial Association, Campbell R. Harvey, it is "incorrect to interpret the [statistical significance] test as providing (1 - p-value)% confidence that the effect being tested is 'true.'"

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[Exhibit 48, Campbell Paper, p. 1410, Exhibit 2, Allen Report, ¶30 & Exhibit 4, Allen Surreply Report, ¶25]

51. **Is Dr. Nye aware that the statement in the *EZCORP* decision is statistically incorrect?**

a. Yes. In his deposition, Dr. Nye admitted that the decision's interpretation of statistical significance was incorrect. [Exhibit 44, Nye Deposition, 42:9-46:8]

52. **Dr. Nye testified that even though the court's statement about statistical significance in *EZCORP* decision was incorrect, he does not think that this misinterpretation "has any effect on the ultimate conclusion" of the court that the lack of statistical significance is not evidence of no price impact. Do you agree with that? [Exhibit 44, Nye Deposition, 42:9-46:8]**

a. Although I do not know for sure what the judge would have concluded with a correct understanding of the statistics, in my opinion, this misunderstanding would have an important effect on the ultimate conclusion. If I believed it was 77% likely that the event impacted the stock price, then I would also come to the court's ultimate conclusion that the event study is not evidence of a lack of price impact. Thus, it is my opinion that this misunderstanding of statistics did affect the conclusion reached by the court in the *EZCORP* decision.

Reason #2

53. **Let's move on to the second reason behind your conclusion that the price movement on April 23, 2019 shows no price impact. Can you explain that?**

a. I found that, consistent with the lack of a statistically significant price reaction after the April 23 alleged corrective disclosure, analyst commentary indicated that Apache's announcement of a deferral at Alpine High was expected given the drastic decline in regional gas prices.

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- b. This is the sort of evidence that makes sense to consider in conjunction with a finding of a lack of statistically significant reaction. It explains why the market would not have reacted in a statistically significant way to the news, and the lack of a statistically significant reaction is consistent with and supportive of this evidence that the alleged corrective disclosure was expected and not a surprise to the market.
54. **Let's discuss the analyst commentary that indicated that the deferral was expected due to the decline in commodity prices. Can you elaborate?**
- a. Analyst commentary on April 23, 2019 consistently characterized the deferral as “expected” and “prudent” given the deteriorating commodity prices. (See Figure 5 below.) [Exhibit 14, April 23, 2019 Macquarie Report, p. 1, Exhibit 15, April 23, 2019 Stephens Report, p. 1 & Exhibit 16, April 23, 2019 Scotiabank Report, p. 1]

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Select Analyst Commentary on April 23, 2019	
Analyst	Commentary
Macquarie	"Given the severity of local Permian natural gas pricing weakness, we think the deferral of gas is prudent and likely expected by investors. [...] However, the announcement itself is not that much of a negative , in our view." [emphasis added]
Stephens	"APA announced that due to extremely low prices at Waha Hub , it has initiated natural gas volume deferrals at Alpine High. [...] While optically we view the release as a negative, we do not think it is a surprise to the market that depressed Waha pricing is hampering Alpine cash generative capabilities." [emphasis added]
Scotiabank	" Not unexpectedly , Apache has decided to defer certain natural gas production out of its gas-heavy Alpine High position in the Permian Basin due to extremely low WAHA hub pricing ." [emphasis added]
Sources: Analyst reports on Apache.	

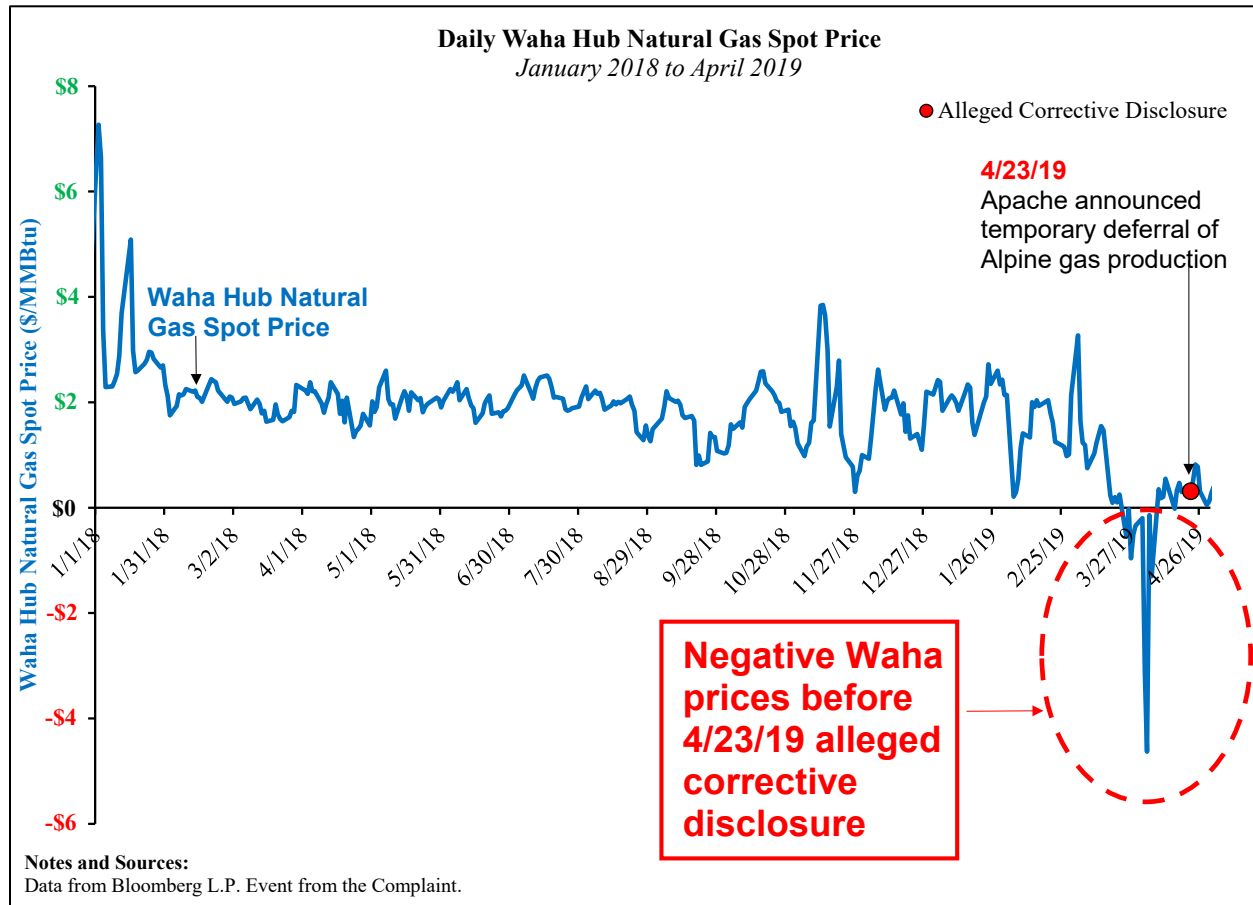
55. **You mentioned in your report that analysts used the word “shut-in” to characterize the deferral. Can you elaborate?**
- a. Analysts described Alpine High’s production deferral as a “shut-in,” which is defined as “available oil or gas which is not being produced from an existing well.” [Exhibit 72, *Merriam Webster*, p. 1] In other words, according to analysts, there was available gas at Alpine High, but it was not being produced. Analysts noted that the shut-ins at Alpine High were due to the weak commodity price outlook. [Exhibit 2, Allen Report, ¶60]

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- b. So, analysts are not indicating they are finding anything new about the amount of oil or gas reserves at Alpine High. Instead, analysts are indicating that because of the low market prices, the available gas is not being extracted.
56. **Doesn't Dr. Nye claim analysts characterized the production deferral at Alpine High as a "negative" event?**
- a. Yes, he does. However, "negative" does not mean unexpected (much less that something the Company previously disclosed was now untrue). Moreover, consistent with the lack of a statistically significant decline on this date, analysts either stated the deferral was "prudent" and "expected" due to the dramatic decline in the Waha Hub natural gas price (which were close to zero at this point in time), or linked it to the decline in the Waha Hub natural gas price. (See Figure 6 below) Note that the actual quotes from the two analysts Dr. Nye cites are that the deferral was a "slight negative" and a "slight negative on the margin."
[Exhibit 3, Nye Reply Report, ¶¶26, 27 & Exhibit 4, Allen Surreply Report, ¶¶56-57]

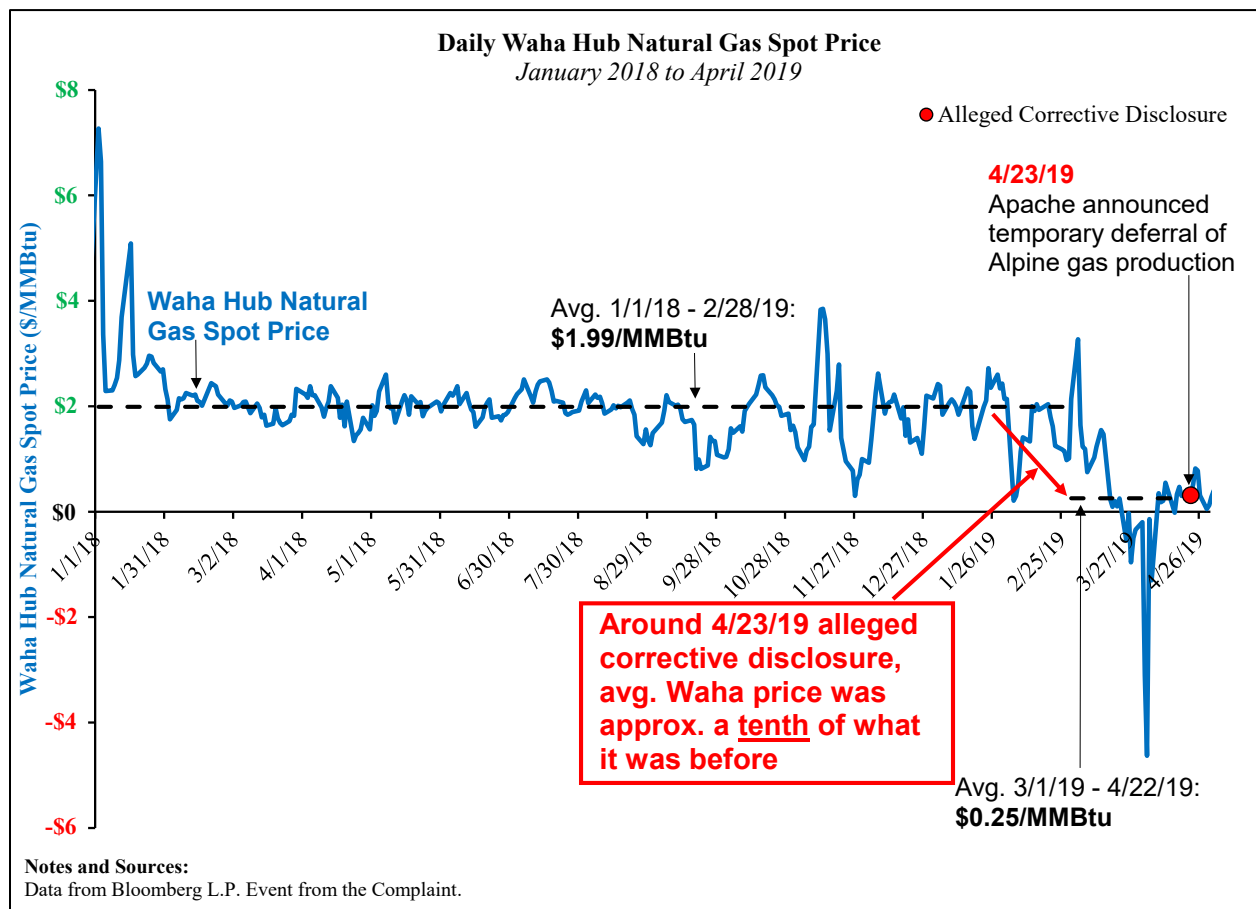
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57. **Could you elaborate on the condition of the Waha Hub natural gas price prior to the April 23, 2019 alleged corrective disclosure?**

- a. There was a substantial decline in gas prices right before the April 23, 2019 alleged corrective disclosure. The average Waha Hub natural gas price in the approximately two months before April 23 (from March 1, 2019 to April 22, 2019) was \$0.25/MMBtu (million British thermal unit), whereas the average Waha Hub natural gas price in 2018 and early 2019 (from January 1, 2018 to February 28, 2019) was \$1.99/MMBtu.

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- b. In other words, the average Waha price in the two months before April 23, 2019 was almost a tenth of what it was in 2018 and early 2019. (Figure 7 below shows the decline in Waha Hub natural gas prices before the April 23 alleged corrective disclosure.)

Figure 7

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Reason #3

58. **Let's move on to the third reason behind your conclusion that the price movement on April 23, 2019 shows no price impact. Did analysts lower their price targets for Apache as a result of the April 23 alleged corrective disclosure?**
- a. No analyst lowered their price targets for Apache after the April 23 alleged corrective disclosure. [Exhibit 4, Allen Surreply Report, ¶47]
 - b. Dr. Nye notes that three analysts lowered their production estimates for Alpine High. However, that does not mean that the deferral was not expected or that it affected the value or price of Apache. None of those three analysts lowered their price targets for Apache. [Exhibit 3, Nye Reply Report, ¶25, Exhibit 4, Allen Surreply Report, ¶47, Exhibit 17, April 23, 2019 Capital One Report, p. 1, Exhibit 18, April 26, 2019 Cowen Report, p. 1 & Exhibit 19, April 28, 2019 Barclays Report, p. 1]
 - c. The Cowen analysts issued an industry report, which was updating estimates for many other E&P companies and linked the “shut-ins” at Alpine High to the low Waha price. Barclays analysts linked the deferral at Apache to the low Waha price. [Exhibit 4, Allen Surreply Report, ¶¶47, 52-53, Exhibit 18, April 26, 2019 Cowen Report, p. 1 & Exhibit 19, April 28, 2019 Barclays Report, p. 1]
 - d. None of the analysts changed their valuation of Apache and Dr. Nye agrees with this. [Exhibit 4, Allen Surreply Report, ¶¶47, 52-53 & Exhibit 44, Nye Deposition, 107:17-108:3]
 - e. In addition, given that the Company said it would be temporarily deferring Alpine High gas production due to the current low regional gas prices, it makes sense that analysts would lower short-term production estimates for Alpine High but not longer-term estimates. For example, analysts at Cowen reduced their 2019

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production estimates, but not their 2020 production estimates. [Exhibit 18, April 26, 2019 Cowen Report, p. 9]

59. **Does Dr. Nye agree with your finding that no analysts lowered their price targets of Apache as a result of the April 23, 2019 alleged corrective disclosure?**

- a. Yes, he does. Dr. Nye cannot find any analyst that lowered their price target or changed their valuation of Apache in response to the April 23, 2019 alleged corrective disclosure. [Exhibit 44, Nye Deposition, 107:17-108:3]

Reason #4

60. **Let's move on to the fourth reason behind your conclusion that the price movement on April 23, 2019 shows no price impact. In his deposition, Dr. Nye testified that it was his understanding that Plaintiffs claim the April 23, 2019 alleged corrective disclosure was corrective of alleged misstatements about Alpine High being profitable at very low prices. What is your response?**

- a. That claim does not make economic sense and is not supported by any market evidence. The market was aware before the Focus Period began that deteriorating commodity prices would drive expectations about Alpine High downward.
- b. Moreover, following this alleged corrective disclosure, no analyst expressed any surprise that Alpine High would be uneconomic at low commodity prices or indicated that this announcement contradicted something they previously thought or understood regarding the alleged misrepresentations.

61. **How do you know the market was aware before the Focus Period began that deteriorating commodity prices would drive expectations about Alpine High downward?**

- a. First, as a general matter, it makes common economic sense. In general, if the price of something goes dramatically low, it will not be economic to produce it.

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Second, I explicitly analyzed the pre-Focus Period alleged misrepresentations pertaining to the economics of Alpine High at low commodity prices.

- b. I showed that no analyst repeated the alleged misstatements when made, and also that analysts, after the alleged misrepresentations, said the opposite of what Plaintiffs are alleging the Company's statements meant – analysts explicitly said that Alpine High would be negatively affected if commodity prices dropped. [Exhibit 4, Allen Surreply Report, ¶¶10-14 & Exhibit 2, Allen Report, ¶¶42-43]
- c. Analysts had noted that Alpine High would be negatively impacted at low prices since before the beginning of the Focus Period and continued to note so during the Focus Period. For example:
 - i. Analysts at Bank of America on February 22, 2018 stated that weak gas prices made it “difficult to have conviction on value.” [Exhibit 7, February 22, 2018 Bank of America Report, p. 1]
 - ii. Analysts at Bank of America on August 9, 2018 noted that they “continue to view APA’s growth strategy centered on the Alpine High negatively given that we believe APA will continue to struggle with price realizations, especially natural gas price realizations[.]” [Exhibit 8, August 9, 2018 Bank of America Report, p. 1]
 - iii. Analysts at Credit Suisse on January 24, 2019 stated that volatile commodity prices “highlight[ed] APA’s vulnerability to wider gas/NGL differentials[.]” [Exhibit 9, January 24, 2019 Credit Suisse Report, p. 1]
 - iv. Analysts at Bank of America on February 8, 2019 commented that their “constructive outlook for oil and cautious view on US natural gas leaves APA’s forward [P/E] multiple compression amongst the lowest in the sector[.]” [Exhibit 10, February 8, 2019, Bank of America Report, p. 1]

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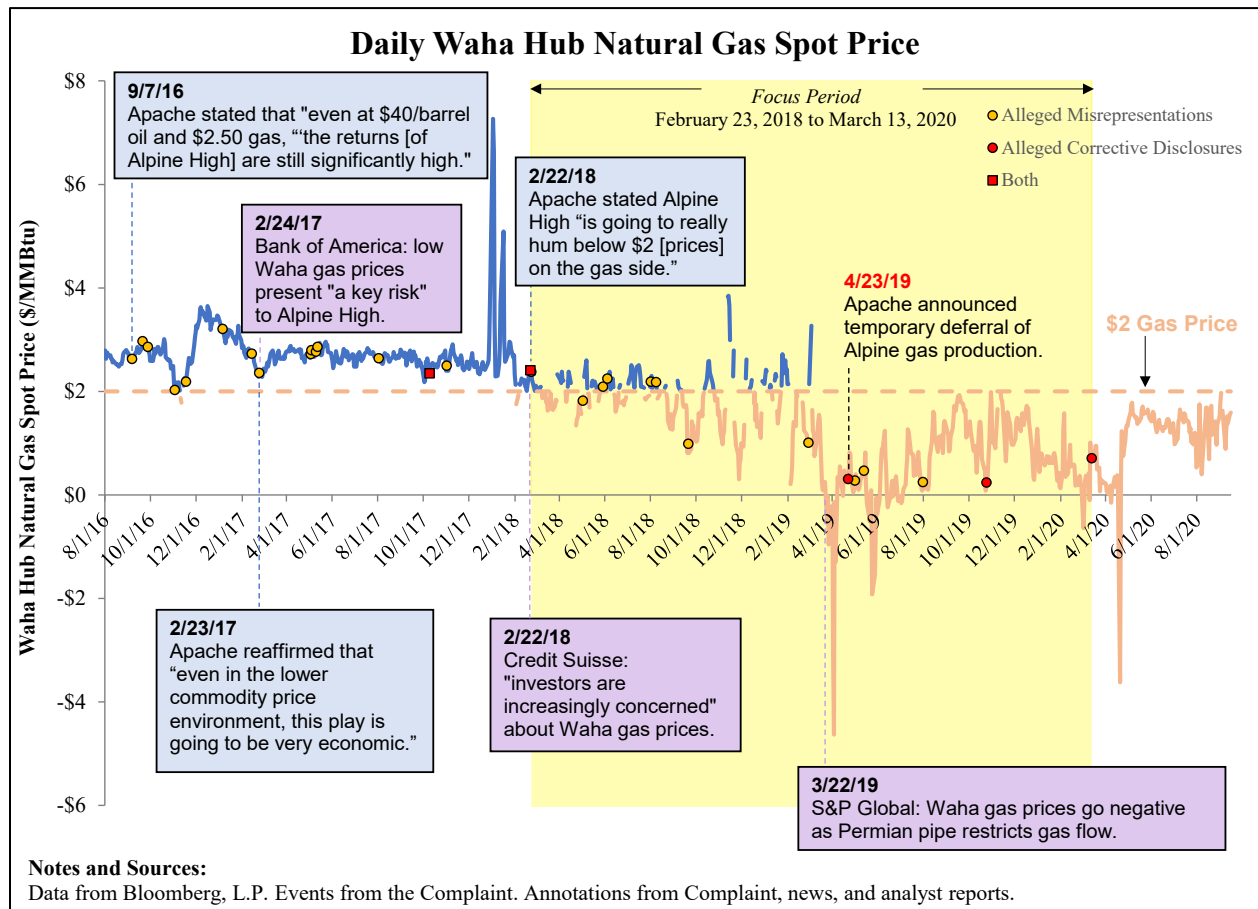
- v. Analysts at Stephens on April 23, 2019 commented that “depressed Waha pricing [was] hampering Alpine cash generative abilities.” [Exhibit 15, April 23, 2019 Stephens Report, p. 1]
- vi. Analysts at MUFG Bank on May 2, 2019 stated that Waha prices would “drive [Apache’s] decision making” at Alpine High. [Exhibit 12, May 2, 2019 MUFG Bank Report, p. 2]
- vii. Analysts at Barclays on October 21, 2019 commented that “current commodity prices” were making Alpine High “uneconomic.” [Exhibit 24, October 21, 2019 Barclays Report, p. 1]

62. Plaintiffs claim Apache misrepresented that Alpine High would be economic at \$2-\$2.50 gas prices, right?

- a. Yes, and those alleged misrepresentations were made before the Focus Period, when gas prices were above those levels.
 - i. Specifically, on September 7, 2016, Apache stated that returns would be high at “\$2.50 gas” prices and on February 22, 2018, Apache stated that Alpine High would “hum below \$2 [prices] on the gas side.” [Dkt. No. 65, Complaint, ¶¶194, 256]
- b. Figure 8 below shows that Waha Hub natural gas spot prices went below \$2 starting in March 2018, right after the beginning of the Focus Period, and stayed consistently below \$2 from early 2019, before the first Focus Period alleged corrective disclosure (April 23, 2019), until after the end of the alleged Class Period. Prices even went negative in late March 2019, right before the first Focus Period alleged corrective disclosure, and remained close to zero for several months. (In Figure 8, gas prices above \$2 are shown in blue and prices below \$2 are shown in pink. Apache’s statements are in the blue boxes and analysts’ comments are in the purple boxes.)

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- i. Contemporaneous market commentary explained that this situation of negative gas prices meant “[c]ompanies increasingly [were] having to pay buyers in the Permian Basin to take their natural gas.” [Exhibit 11, March 25, 2019 *Dow Jones* Article, p. 1]

Figure 8

63. Let's delve into the figure above. Could you give me an example of one of the alleged misrepresentations (pertaining to the economics of Alpine High at low commodity prices) you analyzed?

- a. Yes. Plaintiffs claim that on February 23, 2017 (one year before the start of the Focus Period), Apache made the following misstatement: "even in the lower

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commodity price environment, this play [Alpine High] is going to be very economic.” [Dkt. No. 65, Complaint, ¶224] However, not one analyst mentioned or incorporated this alleged misstatement into their valuation of Apache.

- b. Instead, following this alleged misstatement, analysts explicitly stated that weak commodity prices would challenge the economics of Alpine High (shown in Figure 8 above). [Exhibit 4, Allen Surreply Report, ¶43]
 - i. For example, in a report issued on February 24, 2017, analysts at Bank of America stated that a “key risk” to Apache’s Alpine-High-gas-driven growth would be worsened Waha Hub prices due to a surge in local production. [Exhibit 6, February 24, 2017 Bank of America Report, p. 4]

64. In his deposition, Dr. Nye implied that Alpine High gas production would be economic at zero prices because “[s]ome of the [mis]statements were that [Alpine High was] effectively getting the gas for free.” What is your response to that?

- a. Dr. Nye appears to be referring to an alleged misstatement made at the beginning of the alleged Class Period, on September 7, 2016. [Dkt. No. 65, Complaint, ¶¶32-43 & Exhibit 44, Nye Deposition, 93:21-94:13]
- b. However, the alleged misrepresentation in the Complaint is focusing on Alpine High’s ability to produce high quality wet gas and oil. The alleged misrepresentation is not saying at what prices Alpine High’s gas production would be profitable. In particular, the Complaint states:
 - i. “Indeed, Christmann told investors that Alpine High would yield such volumes of easily extractable, high quality wet gas and oil, that Apache wouldn’t even need the dry gas in order for Alpine High to be profitable—such that “you’re virtually going to get the [dry] gas for free.” [Dkt. No. 65, Complaint, ¶36]

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- c. Moreover, as Dr. Nye testified, the market became aware that Alpine High was gassier (less oily) than expected before the Focus Period started. [Exhibit 44, Nye Deposition, 113:19-114:2]
- 65. **Did the allegedly corrective information on April 23, 2019 change the market's expectations about Alpine High's reserves or the mix of oil and wet gas vs. dry gas.**
 - a. No, it did not. For example, Credit Suisse analysts did not update their estimates of Alpine High's "unbooked reserves" of oil, wet gas, and dry gas until more than 10 days after the April 23, 2019 alleged corrective disclosure. Moreover, Credit Suisse analysts' update 10 days later essentially did not change the estimates of Alpine's "unbooked reserves" of oil, wet gas, and dry gas and was issued after Apache's 1Q19 earnings release, with no attribution to the April 23, 2019 alleged corrective disclosure. [Exhibit 2, Allen Report, ¶61 & Exhibit 4, Allen Surreply Report, ¶53]
 - b. Note "unbooked reserves" reflect the quantity of reserves that are possible and probable, but not proven. [Exhibit 2, Allen Report, footnote 112 & Exhibit 4, Allen Surreply Report, footnote 81]
- 66. **Does Dr. Nye respond to your analysis that none of the analysts changed their understanding of Alpine High's quantity of reserves or mix of oil and wet gas vs. dry gas after the alleged corrective disclosure on April 23, 2019?**
 - a. He agrees and provides no evidence that shows the contrary. [Exhibit 44, Nye Deposition, 108:24-109:18 & Exhibit 3, Nye Reply Report, ¶¶19-33]
 - b. In addition, Dr. Nye testified it was his understanding that the April 23 alleged corrective disclosure was corrective of only one category of alleged misrepresentations: Alpine High's ability to be profitable at low commodity

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prices. [Exhibit 44, Nye Deposition, 97:5-17 & Exhibit 3, Nye Reply
Report, ¶¶19-33]

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Alleged Corrective Disclosure #2: October 25, 2019

67. **Let us move on to the second alleged corrective disclosure on October 25, 2019. What is the second alleged corrective disclosure during the Focus Period?**
- a. According to Plaintiffs, the announcement on October 25, 2019 that Steven Keenan, Apache's Senior Vice President of Worldwide Exploration, had resigned is allegedly corrective of the alleged misrepresentations. [Dkt. No. 65, Complaint, ¶¶313-314]
68. **What was your finding regarding whether the October 25, 2019 alleged corrective disclosure was evidence of price impact from any of the alleged misrepresentations?**
- a. I found that the market and price reaction after the October 25, 2019 alleged corrective disclosure shows no price impact from any of the alleged misrepresentations made during the alleged Class Period.
69. **Before we get into the details, could you highlight the reasons that neither the market nor price reaction after the October 25, 2019 alleged corrective disclosure shows any price impact from any of the alleged misrepresentations made during the alleged Class Period?**
- a. First, even though there was a price decline following the news of Mr. Keenan's resignation, it was not because the market learned anything new about Alpine High. In fact, there was no new news about Alpine High at all (Dr. Nye agrees) and the market did not learn anything new about Alpine High.
- b. Second, no analyst indicated that the news of Mr. Keenan's resignation contradicted something they previously thought or understood regarding Alpine High or the alleged misrepresentations.
- c. Third, the timing of Mr. Keenan's resignation "spooked" investors because it occurred during Apache's drilling of its first exploratory well in Suriname, the

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Maka Central-1 well. [Exhibit 31, October 31, 2019 Credit Suisse Report, p. 5] Apache's Suriname well was "among the most anticipated wells in the world" (and thus very important to the valuation of Apache's stock). [Exhibit 32, December 2, 2019 *Wall Street Journal* Article, p. 1] At the time of the alleged corrective disclosure, it was known that the Company was in the midst of drilling the well, with preliminary results expected around this date. The timing of Mr. Keenan's resignation presaged a potentially negative outcome (or at least the lack of a positive outcome) from the Suriname well.

- d. Fourth, every analyst and market commentator (on and after October 25) that I found who commented on Apache's October 25 stock price decline explicitly attributed the price decline to Apache's Suriname Maka Central-1 well.

Reason #1

70. **Let's discuss the first reason. You said there was no new news about Alpine High on October 25, 2019. But doesn't a lot of analyst commentary mention Alpine High?**

- a. Yes, analyst commentary does mention Alpine High, but analysts only repeat known facts about Alpine High, including how the weak commodity prices had affected production at Alpine High. Dr. Nye agrees with this. [Exhibit 2, Allen Report, ¶¶72-74, Exhibit 4, Allen Surreply Report, ¶57 & Exhibit 44, Nye Deposition, 114:16-21]
- b. For example, on October 25, 2019, analysts at RBC Capital Markets noted that Mr. Keenan was part of Alpine High's discovery team (a fact known years earlier) and that Alpine High's results had not met expectations due to weak commodity prices (which was known many months before this date). All of this information was known before October 25. [Exhibit 26, October 25, 2019 RBC Capital Report, p. 1]

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- c. Moreover, Dr. Nye cannot cite and has not cited to a single analyst attributing the price decline on this date to any new news about Alpine High. All market commentary about the price decline attributes the price decline to Suriname.
71. **Didn't Dr. Nye state that October 25, 2019 is evidence of price impact from the alleged misrepresentations by citing news stories and analysts noting that Mr. Keenan was "considered the 'Godfather' of Alpine High" and market commentators cited the "disappointing performance of Alpine High"?**
- a. Dr. Nye did make that claim. However, all of that information was not new news and thus, in an efficient market, could not impact Apache's stock price. [Exhibit 3, Nye Reply Report, ¶43]
 - i. Mr. Keenan being the "Godfather" of Alpine High was already known years before this date. [Exhibit 5, January 6, 2017 *Houston Chronicle* Article, p. 1, Exhibit 31, October 31, 2019 Credit Suisse Report, p. 5, Exhibit 27, October 25, 2019 Credit Suisse Report, p. 1 & Exhibit 29, October 29, 2019 Morgan Stanley Report, p. 1]
 - ii. Similarly, the "disappointing performance of Alpine High" was known months before this date. [Exhibit 7, February 22, 2018 Bank of America Report, p. 1, Exhibit 8, August 9, 2018 Bank of America Report, p. 1 & Exhibit 21, October 7, 2019 Cowen Report, p. 2]
 - iii. Note that on this date, the market referred to Mr. Keenan as the "head of Worldwide Exploration" for Apache, which is consistent with Mr. Keenan's departure's sparking concern about the "highly-anticipated Suriname Maka Central-1 well." [Exhibit 27, October 25, 2019 Credit Suisse Report, p. 1]

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72. **Dr. Nye testified that the October 25, 2019 alleged corrective disclosure is corrective of the alleged misrepresentations that “Alpine High was world class” and that Mr. Keenan’s resignation implied that “there will be no [Alpine High] recovery.” What is your response? [Exhibit 44, Nye Deposition, 110:23, 112:3]**
- a. Analysts on this date did not indicate that Mr. Keenan’s resignation had newly informed them that Alpine High was “disappointing” or that there would be “no recovery” at Alpine High. Instead, analysts only repeated previously known facts about Alpine High, including the effect that weak commodity prices had on production at Alpine High.
 - b. Moreover, analysts had commented on expectations about reduced activity at Alpine High before Mr. Keenan’s resignation was announced.
 - i. For example, on September 23, 2019, a month before the October 25 alleged corrective disclosure, analysts at Truist Securities stated that they “would not be surprised to see the company shift capital away from [Alpine High] should NGL/gas prices remain around current levels.” [Exhibit 20, September 23, 2019 SunTrust Report, p. 7]
 - ii. Similarly, on October 14, 2019, two weeks before the October 25 alleged corrective disclosure, analysts at JP Morgan stated that “[g]iven the retrenchment in gas and NGL prices, we expect [Apache] to reduce capital allocation to the Alpine High play in 2020.” [Exhibit 22, October 14, 2019 JP Morgan Report, p. 3]
73. **So, has Dr. Nye pointed to any new news about Alpine High released on October 25, 2019?**
- a. No, he has not. Moreover, in his deposition, Dr. Nye agreed that there was no new news about Alpine High’s performance or activity released on October 25, 2019. [Exhibit 44, Nye Deposition, 114:16-21]

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74. Did any analysts change their dry gas vs. wet gas and oil reserve mix estimates for Alpine High after the October 25, 2019 alleged corrective disclosure?

- a. No, they did not. Moreover, in his deposition, Dr. Nye agreed that analysts did not change their estimates about Alpine High after this alleged corrective disclosure. [Exhibit 2, Allen Report, ¶73, Exhibit 4, Allen Surreply Report, ¶7 & Exhibit 44, Nye Deposition, 114:22-115:7]

Reason #2

75. Let's move on to your second reason. You state that no analyst indicated that the news of Mr. Keenan's resignation contradicted something they previously thought or understood regarding Alpine High or the alleged misrepresentations. Could you expand on that?

- a. Yes. Before the October 25, 2019 alleged corrective disclosure, analysts had commented that weak commodity prices would drive expectations of Alpine High downward and lead to reduced activity at Alpine High. After Mr. Keenan's resignation was announced, analysts only repeated these comments, and there is no indication that any analyst contradicted their previously expressed opinions about Alpine High.
- b. Moreover, as Dr. Nye testified in his deposition, analysts did not change their estimates about Alpine High after the October 25, 2019 alleged corrective disclosure, which shows that the news of Mr. Keenan's resignation did not lead to analysts contradicting their previous understanding of Alpine High's reserves. [Exhibit 2, Allen Report, ¶73, Exhibit 4, Allen Surreply Report, ¶7 & Exhibit 44, Nye Deposition, 114:22-115:7]

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Reason #3

76. **Let's move on to your third reason. You mentioned that the timing of Mr. Keenan's resignation "spooked" investors because it occurred during Apache's drilling of its Suriname Maka Central-1 well. Could you expand on that?**
- a. Yes. The timing of Mr. Keenan's resignation "spooked" investors because it occurred in the middle of Apache's drilling of its first exploratory well in Suriname, the Maka Central-1 well. [Exhibit 31, October 31, 2019 Credit Suisse Report, p. 5] The market's expectations for Apache's Suriname exploration were "exceedingly high," and the Maka Central-1 well was "among the most anticipated wells in the world." [Exhibit 32, December 2, 2019 *Wall Street Journal* Article, p. 1] Thus, Apache's Suriname exploration and news regarding its first exploratory well were very important to the valuation of Apache's stock. Given that preliminary results for this well were expected around this date, the timing of Mr. Keenan's resignation presaged a potentially negative outcome (or at least the lack of a positive outcome) from the Suriname well.
77. **How do you know Apache's Suriname exploration was important to the market's valuation of Apache?**
- a. Because analysts specifically mentioned that the outcome of exploration at Suriname could be a "high impact game changer." For example:
- i. On October 18, 2019, analysts at Bank of America commented that Apache's "exploration program in Suriname" had "potential to reset the investment case with a risk profile that is too good to ignore but too uncertain to buy." [Exhibit 23, October 18, 2019 Bank of America Report, p. 1]
- ii. On October 25, 2019, analysts at Credit Suisse explicitly noted that the stock price decline "highlight[ed] the high expectations for the [Suriname]

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well already baked into APA's stock price[.]” [Exhibit 27, October 25, 2019 Credit Suisse Report, p. 1]

- iii. On October 29, 2019, analysts at Morgan Stanley noted that the stock price decline “highlight[ed] the sizable Suriname option value embedded in APA's stock” and attributed “~15% of APA's current market value” to Suriname. [Exhibit 29, October 29, 2019 Morgan Stanley Report, p. 2]
- iv. On October 30, 2019, analysts at RBC Capital explicitly noted that the “outcome of exploration activity in Suriname could be a high impact game changer,” and “[r]ecent APA share weakness reflected concern on the Suriname program following a management departure.” [Exhibit 30, October 30, 2019 RBC Capital Report, p. 1]

Reason #4

78. **Let's move on to your fourth reason. You mentioned that all market commentary about the price decline on October 25, 2019 attributed the price decline to Suriname. Could you expand on that?**

- a. Yes. There were three analyst reports issued on October 25, 2019. All three analyst reports issued on October 25, 2019 directly attributed Apache's stock price decline to market concerns about the Suriname Maka Central-1 well, and none of them said there was any new news about Alpine High (shown in Figure 9 below). [Exhibit 27, October 25, 2019 Credit Suisse Report, p. 1, Exhibit 26, October 25, 2019 RBC Capital, p. 1 & Exhibit 28, October 25, 2019 SunTrust Report, p. 1]

*In re Apache Corp. Securities Litigation***Class Certification Hearing Direct Testimony of Lucy P. Allen****Section 4: Alleged Corrective Disclosure #2: October 25, 2019****Figure 9**

Analyst Commentary on October 25, 2019			
Analyst	Commentary	Attribute Price Decline To...	
		Suriname Concerns?	New News About Alpine High?
RBC Capital Markets	"We think APA share weakness is a reaction to investor concern that the resignation is related to the outcome of APA's Maka-1 exploration well in Suriname. " [emphasis added]	Yes	No
SunTrust	" Apache's stock underperformed this morning (down ~5.5% vs. XOP up ~1%) on investor speculation that a SVP's resignation (See Link) is linked to an upcoming unsuccessful Suriname Maka-1 exploration well in Block 58." [emphasis added]	Yes	No
Credit Suisse	" More recently, APA has ventured into Suriname where it is currently drilling one of the most highly-anticipated exploration wells of the year [...] Timing of resignation is concerning. While Mr. Keenan's exact role in Suriname is not clear (APA claims the resignation is not connected to the exploration prospect), APA is underperforming peers by >5% today given the timing of the departure of the head of Worldwide Exploration when the company is on the 31st day of drilling the Suriname well, i.e. is now within the expected 30-60 day spud-to-TD window. Today's sell-off nonetheless highlights the high expectations for the well already baked into APA's stock price[.] " [emphasis original and added]	Yes	No
Sources: Analyst reports on Apache.			

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79. **Dr. Nye claims that the fact that Apache’s stock price “partially rebounded roughly 35 minutes” after the news of Mr. Keenan’s resignation, when reports came out that the resignation was unrelated to Suriname, is evidence that the overall price decline on October 25, 2019 was due to Alpine High and not Suriname. What is your response?**

a. Dr. Nye’s claim is completely unsupported and contrary to market commentary. Contrary to Dr. Nye’s claim, market and analyst commentary days and months after October 25, 2019 (i.e., after the intraday rebound and news that the resignation was unrelated to Suriname) still attributed the overall price decline on October 25 to concerns about the Suriname exploration. Moreover, no analyst tied the price decline to anything new about Alpine High. [Exhibit 3, Nye Reply Report, ¶¶37 & Exhibit 4, Allen Surreply Report, ¶¶55-56]

b. Further, the Credit Suisse analyst report issued on October 25, 2019, which appears to have been released after reports came out that Mr. Keenan’s resignation was not due to Suriname (the Credit Suisse analysts noted that “APA claims the resignation is not connected to the exploration prospect”), explicitly attributes the stock price decline on this date to the resignation sparking concerns about Suriname.

i. The title of the report is “Resignation of Exploration Head Highlights Suriname Risk to Share Price” and the report explicitly comments that the timing of the resignation was “concerning” given the Suriname exploration:

“Timing of resignation is concerning. While Mr. Keenan’s exact role in Suriname is not clear (APA claims the resignation is not connected to the exploration prospect), APA is underperforming peers by >5% today given the timing of the departure of the head of Worldwide Exploration when the company is on the 31st day of drilling the Suriname [Maka Central-1] well, i.e. is now within the expected 30-60 day spud-to-TD window. Today’s sell-off nonetheless highlights the high expectations for the well

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already baked into APA's stock price (more detail below)." [Exhibit 27, October 25, 2019 Credit Suisse Report, p. 1]

80. **You said analyst commentary days after the intraday rebound on October 25, 2019 attributed the overall price decline to Mr. Keenan's resignation sparking concerns about Suriname. Do you have an example of that?**

- a. Yes, for example, a few days after the resignation was announced, on October 31, 2019, Credit Suisse analysts explicitly noted that even though Mr. Keenan's departure was "supposedly unrelated to Suriname," given that expectations for Apache's Suriname well were "exceedingly high" and the announcement came in the middle of drilling the well, "the timing nonetheless spooked investors."

Expectations for the well are exceedingly high, underscored by the sharp selloff in the stock last Friday after news broke that APA's head of Worldwide Exploration had departed the company – supposedly unrelated to Suriname, though with APA in the middle of drilling the well the timing **nonetheless spooked investors**. [emphasis added] [Exhibit 31, October 31, 2019 Credit Suisse Report, p. 5]

- b. This indicates that Apache's statement that Mr. Keenan's departure was not related to Suriname did not fully alleviate market concern about the Suriname well.

81. **You also mentioned that market commentary months after October 25, 2019 attributed the overall price decline on that date to concerns about Suriname. Do you have an example of that?**

- a. Yes, for example, a *Wall Street Journal* article published months later in December 2019 characterized Apache's Suriname Maka Central-1 well as "among the most anticipated wells in the world" and explained that the price decline on October 25 was "prompt[ed] [by] concern about Suriname." [Exhibit 32, December 2, 2019 *Wall Street Journal* Article, pp. 1-2]

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Section 4: Alleged Corrective Disclosure #2: October 25, 2019

82. **To clarify, how does market commentary refute Dr. Nye's claim that the rebound in Apache's stock price on October 25, 2019 is evidence that the overall price decline on October 25, 2019 was due to Alpine High and not Suriname?**
- a. First, the commentary explicitly states that the price decline was due to Suriname. As discussed above, market and analyst commentary days and months *after* October 25, 2019 (*i.e.*, after the intraday rebound and news that the resignation was unrelated to Suriname), still attributed the overall price decline on October 25 to concerns about the Suriname exploration [Exhibit 31, October 31, 2019 Credit Suisse Report, p. 5].
 - i. In addition, market commentary clearly indicates that this was a critical time in Apache's Suriname exploration. Given that expectations for Suriname were "exceedingly high" and Suriname was one of "the most anticipated wells in the world" at the time, Suriname was a significant component of the value of Apache's stock. Thus, any information that would potentially indicate negative news or the absence of positive news about Apache's Suriname prospect would be expected to impact the stock price. [Exhibit 31, October 31, 2019 Credit Suisse Report, p. 5]
 - b. Second, there is a lack of any analyst or market commentary stating the price decline is due to new news about Alpine High or any new news about Alpine High being released.
83. **Is Apache's Suriname exploration part of the alleged fraud?**
- a. No, the alleged fraud does not concern Apache's Suriname exploration. As Dr. Nye testified, all of the alleged misrepresentations concern Alpine High. [Exhibit 44, Nye Deposition, 117:21-118:1]

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Section 5: Alleged Corrective Disclosure #3: March 16, 2020

Alleged Corrective Disclosure #3: March 16, 2020

84. **Let us move on to the third alleged corrective disclosure, on March 16, 2020. What is the third alleged corrective disclosure during the Focus Period?**
- a. In their Complaint, Plaintiffs claim that a March 16, 2020 *Seeking Alpha* article was allegedly corrective since, in the words of Plaintiffs, it disclosed how Alpine High had left Apache “particularly challenged amongst its E&P peers” with high levels of debt and allegedly caused Apache’s stock price to fall. [Dkt. No. 65, Complaint, ¶315]
85. **What was your finding regarding whether the March 16, 2020 alleged corrective disclosure was evidence of price impact from any of the alleged misrepresentations?**
- a. I found that the market and price reaction after the March 16 alleged corrective disclosure shows no price impact from any of the alleged misrepresentations made during the alleged Class Period.
86. **Before we get into the details, could you highlight the reasons that neither the market nor price reaction after the March 16, 2020 alleged corrective disclosure shows any price impact from any of the alleged misrepresentations made during the alleged Class Period?**
- a. There are six main reasons.
- i. First, there was no new news about Alpine High (or even about Apache) within the March 16, 2020 *Seeking Alpha* article.
- ii. Second, no analyst or news story mentioned the *Seeking Alpha* article, let alone tied it to any price drop.
- iii. Third, Plaintiffs now appear to be claiming a Susquehanna analyst report issued on this same date is also an alleged corrective disclosure of the

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alleged misrepresentations. However, the Susquehanna report also does not have any new news about Alpine High and does not even mention it.

- iv. Fourth, the Susquehanna report was an industry report, not an Apache-specific report, that lowered “price targets across [its] coverage universe” of 22 E&P companies, including for Apache, because of market and industry wide factors in the wake of a recent industry “price shock.” [Exhibit 38, March 16, 2020 Susquehanna Report, pp. 1-2]
- v. Fifth, an event study on this date would be uninformative about price impact of the alleged misrepresentations since no new news about Alpine High was released. Any attempt to do an event study would have to adjust for the record-high volatility on this date that occurred after the onset of the COVID-19 pandemic. For example, March 16, 2020 was the first trading day after President Trump issued a proclamation declaring the COVID-19 outbreak a national emergency. [Exhibit 35, March 13, 2020, Proclamation of National Emergency, p. 1]
- vi. Sixth, it appears that Plaintiffs may have chosen this date to be an alleged corrective disclosure date not because they found something actually corrective of the alleged misrepresentations on this date, but instead because there was a large drop in Apache’s stock price. This was a particularly volatile day for the market with many dramatic changes in stock prices of many companies as the beginning of the COVID-19 pandemic unfolded. For example, on this date, the “Dow” index (the Dow Jones Industrial Average) recorded its largest one-day point drop and second largest percent drop in history. [Exhibit 36, March 16, 2020 *NPR* Article, p. 2] Although there was a large price movement on this day, there was no Apache-specific news.

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Reason #1

87. **Let's discuss the first reason. You said there was no new news about Alpine High in the *Seeking Alpha* article. Was there anything about Alpine High in the article that supports price impact during the Focus Period from the alleged misrepresentations made during the alleged Class Period?**

- a. No, there was not. The article does contain two sentences that mention Alpine High, stating: "The prices of natural gas and NGL have already been low for an extended period. This forced Apache to shift capital away from the wet-gas rich Alpine High play which has been driving the company's production growth. Apache also reduced Alpine High's value by \$1.4 billion." Both the shift in capital away from Alpine High and the \$1.4 billion reduction in Alpine High's value were announced previously, as Dr. Nye agrees. [Exhibit 44, Nye Deposition, 130:22-131:16, Exhibit 31, October 31, 2019 Credit Suisse Report, p. 1 & Exhibit 34, March 2, 2020 JP Morgan Report, p. 3]
- b. It is also notable that the *Seeking Alpha* article describes Alpine High as "wet-gas rich." Thus, the *Seeking Alpha* article is essentially saying the opposite of what Plaintiffs allege is corrective, *i.e.*, Plaintiffs claim the corrective information is that Alpine High was "too heavy on unprofitable 'dry' gas and too light on valuable oil and 'wet' gas," but at the end of the alleged Class Period, the *Seeking Alpha* article is still characterizing Alpine High as "wet-gas rich." [Dkt. No. 65, Complaint, ¶4, Exhibit 37, *Seeking Alpha* Article, p. 4 & Exhibit 2, Allen Report, ¶80]
- c. Thus, the article's discussion of Alpine High's reserve composition is contrary to Plaintiffs' claims that the article represents a corrective disclosure. Rather than have any corrective information related to the alleged misrepresentations, the article has no new news about Alpine High and continues calling it "wet-gas rich." [Exhibit 37, *Seeking Alpha* Article, p. 4 & Exhibit 2, Allen Report, ¶80]

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88. **Plaintiffs claim the *Seeking Alpha* article disclosed that Apache had \$8 billion in debt in 2019 and that its debt-to-equity ratio was almost 250%. What is your response?**
- a. None of the information about Apache's debt or debt-to-equity ratio in the *Seeking Alpha* article was new and thus in an efficient market could not impact the stock price.
 - b. Apache's debt and equity figures had already been publicly announced (i.e., released before the *Seeking Alpha* article) and the article is not claiming that Apache's debt levels or ratios are any different than already known. [Exhibit 33, February 26, 2020 *Earnings Release*, p. 16, Dkt. No. 65, Complaint, ¶315 & Exhibit 37, *Seeking Alpha* Article, p. 5] The Company's February 26, 2020 earnings release had already specifically disclosed Apache's \$8 billion debt and equity as of 2019 that the *Seeking Alpha* article used to calculate the "debt-to-equity ratio of almost 250%." [Exhibit 33, February 26, 2020 *Earnings Release*, p. 16]
 - c. Moreover, Dr. Nye testified that the debt-to-equity ratio mentioned in the *Seeking Alpha* article was simply the ratio for Apache's 2019 reported financials, which was released on February 26, 2020, and thus would not be new news. [Exhibit 44, Nye Deposition, 131:17-132:1, Exhibit 37, *Seeking Alpha* Article, p. 5 & Exhibit 33, February 26, 2020 *Earnings Release*, p. 16]
89. **The *Seeking Alpha* article mentioned that Apache had "shifted capital away from the wet-gas rich Alpine High play, which has been driving the Company's production growth." Was this new information? [Exhibit 37, *Seeking Alpha* Article, p. 4]**
- a. No, this was publicly known many months before the *Seeking Alpha* article and Dr. Nye agreed that it was not new news. [Exhibit 44, Nye Deposition, 131:8-11, Exhibit 31, October 31, 2019 Credit Suisse Report, p. 1]

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90. **Your report stated that there was no new news about Alpine High and Apache in the *Seeking Alpha* article. Does Dr. Nye provide any evidence refuting your conclusion that there was no new news in the *Seeking Alpha* article?**
- a. No, he does not.
91. **So, what exactly does Dr. Nye argue is corrective about the *Seeking Alpha* article?**
- a. Dr. Nye testified that he understands Plaintiffs claim the *Seeking Alpha* article is corrective of the alleged misrepresentations regarding Alpine High being “transformational.” However, as discussed above, there was nothing new about Alpine High disclosed in the *Seeking Alpha* article. [Exhibit 44, Nye Deposition, 138:18-23]
- b. Dr. Nye testified in his deposition that at the time the *Seeking Alpha* article was written, the market already knew “Alpine High was not” doing well and in fact “was pretty much defunct at that point.” [Exhibit 44, Nye Deposition 148:8-149:5] That is entirely inconsistent with the *Seeking Alpha* article revealing new news that Alpine High would not be a “transformational discovery.”

Reason #2

92. **Let’s discuss the second reason. You stated no analyst or news story mentioned the *Seeking Alpha* article. How did you come to this conclusion?**
- a. I searched through all news stories on Apache from Factiva and Bloomberg and all analyst reports on Apache that I could find. I focused on news stories and analyst reports that were issued on March 16, 2020 and up to one week after, and found no mention of the March 16, 2020 *Seeking Alpha* article. [Exhibit 2, Allen Report, ¶77 & Exhibit 4, Allen Surreply Report, ¶61 and footnote 96]

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93. **How does the lack of analyst commentary and news stories mentioning the *Seeking Alpha* article support your conclusion that the price movement on March 16, 2020 does not show price impact from the alleged misrepresentations made in the alleged Class Period?**
- a. Plaintiffs claim that Apache's stock price dropped "45%" over March 16 and 17 in response to the *Seeking Alpha* article. If that were the case, one would expect analysts and news stories to at the very least mention the *Seeking Alpha* article. However, no analysts and no news stories do. [Dkt. No. 65, Complaint, ¶316, Exhibit 2, Allen Report, ¶77 & Exhibit 4, Allen Surreply Report, ¶61 and footnote 96]
 - b. According to Plaintiffs, Apache's stock traded in an efficient market during the alleged Class Period, with many analysts covering the stock. [Dkt. No. 65, Complaint, ¶326 & Exhibit 1, Nye Report, ¶70]
 - c. Analysts typically issue reports after new important information about the company is released, and these reports play an important role in disseminating information about a stock and can be a valuable source of information on market knowledge and sentiment at the time. The lack of analyst reports and any news stories mentioning the *Seeking Alpha* article after this date is consistent with the lack of price impact and demonstrates that the *Seeking Alpha* article was not important to the market's valuation of Apache. [Exhibit 67, *In Re TECO* Decision, p. 5, Exhibit 63, *Barrie* Decision, ¶35, & Exhibit 64, *Bricklayers* Decision, p. 12]
94. **Does Dr. Nye provide any evidence refuting your conclusion that no analysts or news stories mentioned the *Seeking Alpha* article, much less link it to a price drop?**
- a. No, he does not.

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Reason #3

95. **Moving onto the Susquehanna report, let's discuss your third reason. Dr. Nye claims in his Reply Report that you ignored the Susquehanna report in your analyses. What is your response?**
- a. As I testified in my deposition, I did consider the Susquehanna report in my analyses. I reviewed all analyst reports (including the Susquehanna report) and news stories on Apache issued after the March 16, 2020 alleged corrective disclosure and did not find anyone saying that there was any new information about Alpine High or attributing Apache's stock price drop to anything related to Alpine High. [Exhibit 2, Allen Report, ¶¶76-79 & Exhibit 4, Allen Surreply Report, ¶61 and footnote 96]
 - b. In addition, at the time of my reports, I did not understand (and I still do not understand) the Complaint to be alleging the Susquehanna report to be corrective of the alleged misrepresentations for the following reasons:
 - i. First, the Susquehanna report does not have any new news about Alpine High, and in fact, does not even mention Alpine High. Dr. Nye agrees with this fact. [Exhibit 4, Allen Surreply Report, ¶64, Exhibit 38, March 16, 2020 Susquehanna Report, pp. 1-32, & Exhibit 44, Nye Deposition, 149:6-8] Hence, it is unclear how the Susquehanna report can be corrective of the alleged misrepresentations.
 - ii. Second, although it does not matter to my analysis, a plain reading of the Complaint indicates that Plaintiffs are not alleging the Susquehanna report to be corrective of the alleged misrepresentations. The Complaint has an entire section devoted to the alleged corrective disclosures starting on October 2019 entitled the "Truth Emerges." The Susquehanna report is not mentioned once in this section of the Complaint. [Dkt. No. 65, Complaint,

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Section V] I note that the Complaint does mention the Susquehanna report once in another section, but to me a simple reading of that other section also indicates that the *Seeking Alpha* article is the alleged corrective disclosure, not the Susquehanna report. [Dkt. No. 65, Complaint, ¶316]

96. **What exactly does Dr. Nye claim is corrective about the Susquehanna report?**
- a. In his deposition, Dr. Nye testified that he understands Plaintiffs claim the Susquehanna report is corrective of the alleged misrepresentations regarding Alpine High being “transformational.” However, this makes no sense. If the Susquehanna analysts had newly found out that Alpine High was no longer “transformational,” one would expect them to have at least mentioned “Alpine High,” which they do not. [Exhibit 44, Nye Deposition, 138:18-23 & Exhibit 4, Allen Surreply Report, ¶61 and footnote 96]
 - b. Dr. Nye testified in his deposition that at the time the Susquehanna report was written the market already knew “Alpine High was not” doing well and in fact “was pretty much defunct at that point.” [Exhibit 44, Nye Deposition 148:8-149:5] That is entirely inconsistent with his claim that the Susquehanna report revealed new news that Alpine High would not be a “transformational discovery.”

Reason #4

97. **Let’s discuss your fourth reason. How do you know the Susquehanna analysts’ reduction of expectations for Apache is due to changing oil prices and not any new information about Alpine High?**
- a. First, the Susquehanna report not only reveals no new information about Alpine High but also does not even mention Alpine High.
 - b. Second, the plain wording of the Susquehanna report makes that clear. The Susquehanna report is an industry report on all of the 22 companies it follows in

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the E&P industry. It is not an analyst report specific to Apache. [Exhibit 38, March 16, 2020 Susquehanna Report, pp. 1-32]

- c. The Susquehanna report is lowering price targets for all but one of the 22 companies in their coverage to account for the drastic decline in oil prices in the wake of “price shocks.” The report itself makes this clear, explaining in its very first sentence that “[w]ith oil markets likely to remain oversupplied, we are changing our 2020/21 WTI price assumptions to \$37/\$40 (vs. \$55/\$55 previously)” and continuing to explain that “we are lowering price targets across the coverage universe, which are now based on a \$40/bbl WTI assumption in 2021.” The only company whose price target is not reduced is Cabot Oil and Gas Corporation, which had “zero exposure to oil prices.” The report also states that “[w]e are also reducing [Henry Hub] natural gas assumptions to ~\$2.15/ \$2.50 (vs. \$2.40/\$2.60 previously).” [Exhibit 38, March 16, 2020 Susquehanna Report, pp. 1-2]
- d. The Susquehanna report downgrades Apache and two other companies (Noble Energy, Inc. and Occidental Petroleum Corporation) from “Positive” (buy rating) to “Neutral” (hold rating), for the exact same reason: the “large uncertainty in the magnitude and timing of a recovery in oil prices.” As the Susquehanna report indicates: “With the lower [WTI and Henry Hub natural gas] price assumptions, we are moving to a Neutral rating on APA [Apache], NBL [Nobel Energy], and OXY [Occidental Petroleum].” [Exhibit 38, March 16, 2020 Susquehanna Report, p. 2]
- e. Susquehanna’s reduction of expectations for Apache is not due to any new information about Alpine High (there is literally no information about Alpine High) and instead is due to market and industry wide factors. Thus, the Susquehanna report is not corrective of the alleged misrepresentations and does

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not show price impact from the alleged misrepresentations. [Exhibit 4, Allen Surreply Report, ¶64]

Reason #5

98. **Let's discuss your fifth reason. Why is an event study on March 16, 2020 uninformative about price impact from the alleged misrepresentations?**

- a. Because, as discussed earlier, no new information about Alpine High, let alone any corrective information about the alleged misrepresentations, was released on this date, and Dr. Nye has not identified any. [Exhibit 2, Allen Report, ¶¶80-87 & Exhibit 4, Allen Surreply Report, ¶¶63-67]

99. **Dr. Nye's event study model and your alternative event study model result in a statistically significant decline on March 16, 2020. Shouldn't that tell you something about price impact from the alleged misrepresentations?**

- a. The results of both models do not tell you that the movement on March 16 is related to the alleged misrepresentations. In fact, the results of both models do not even tell you that the movement is due to company-specific information because the models do not control for the record-high volatility on March 16 that occurred at the beginning of the COVID-19 pandemic. [Exhibit 2, Allen Report, ¶¶88-96, Exhibit 4, Allen Surreply Report, ¶¶69-71 & Exhibit 1, Nye Report, p. 280]
- b. Dr. Nye attempts to adjust for this record-high volatility in his Reply Report (in response to the analysis in the Allen Report), but he does not fully adjust for it. If Dr. Nye had followed the methodology in the paper he relies upon, he would find no statistically significant price reaction in Apache's stock on March 16, 2020. [Exhibit 3, Nye Reply Report, ¶49 & Exhibit 4, Allen Surreply Report, ¶¶72-74]

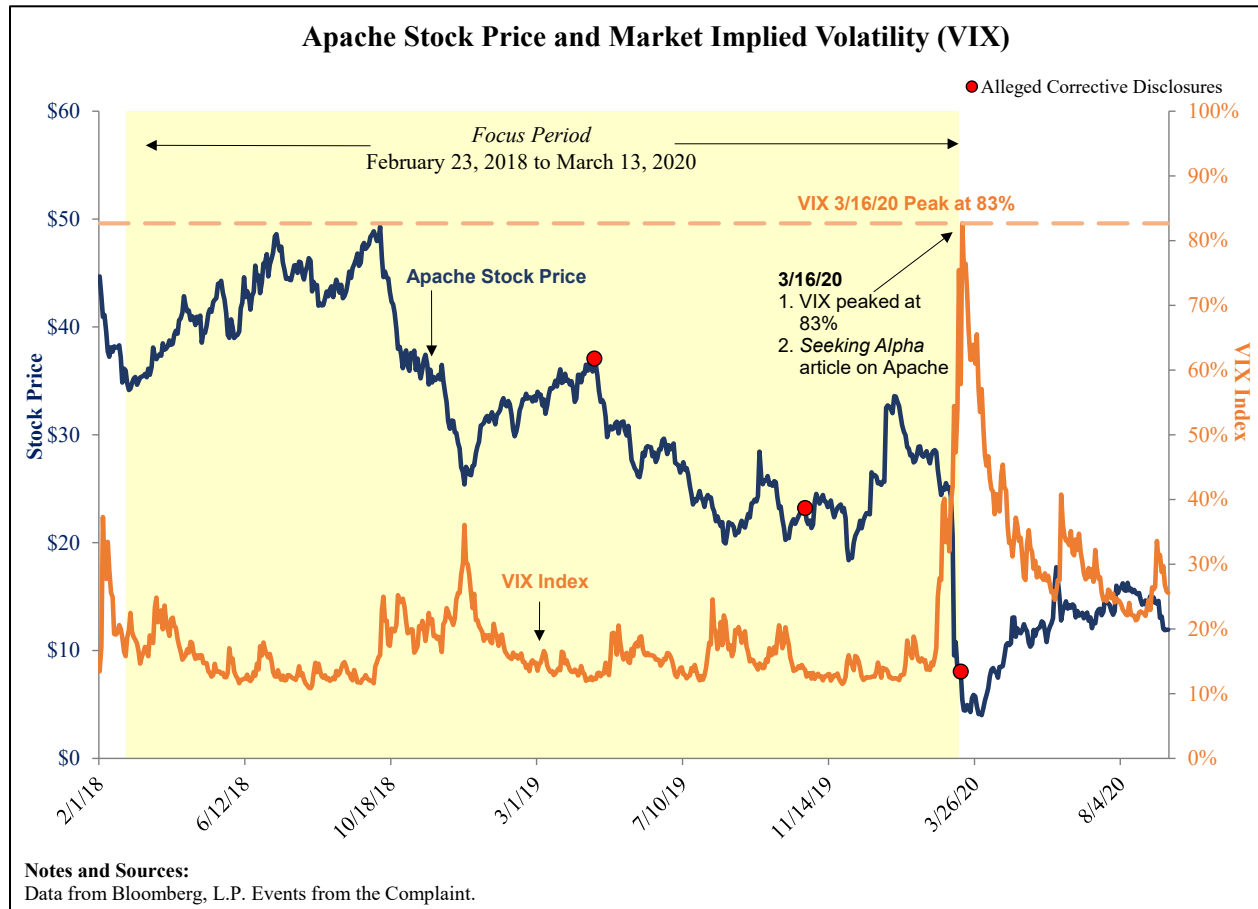
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100. **What do you mean by record-high volatility on this date?**

- a. In the days before the March 16, 2020 alleged corrective disclosure, market volatility, as measured by the Chicago Board Options Exchange's CBOE Volatility Index (the "VIX Index"), increased substantially in response to the fears and uncertainty at the beginning of the COVID-19 pandemic. On March 16, 2020, market volatility reached an all-time high, a record that still holds to this date (*i.e.*, the market volatility as measured by the VIX Index had never been this high in the past and has never been this high since). The VIX Index was at 83 on March 16, approximately 5 times its average value from February 23, 2018 to February 28, 2020, the two year period during the Focus Period before the COVID-19 pandemic. [Exhibit 2, Allen Report, ¶¶88-96, Exhibit 4, Allen Surreply Report, ¶¶69-71, Exhibit 40, March 18, 2020 *USA News* Article, p. 2 & Exhibit 39, March 17, 2020 *Dow Jones Institutional News* Article, p. 1] Figure 10 below shows the VIX Index (orange line) along with Apache's stock price (blue line) around the Focus Period.

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101. **In his deposition, Dr. Nye stated that the VIX is a measure of implied volatility that tries to measure market expectations of volatility over the next year. Do you agree? [Exhibit 44, Nye Deposition, 161:19-162:2]**

- a. No, as the CBOE indicates, “the VIX Index is a calculation designed to produce a measure of constant, 30-day expected volatility of the U.S. stock market” and “it is one of the most recognized measures of volatility – widely reported by financial media and closely followed by a variety of market participants as a daily market indicator.” [Exhibit 71, CBOE Article, p. 5 & Exhibit 73, S&P Dow Jones Indices Article, p. 1]

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102. **Why would one have to adjust Dr. Nye’s original event study model and your alternative event study model for the heightened market volatility due to the COVID-19 pandemic?**

- a. Both Dr. Nye’s event study model (from his initial report) and my alternative event study model use a control period of a year before March 16, 2020. In other words, the event studies use the volatility in the year before this date to estimate the range of normal expected daily variation in Apache’s stock on this date. [Exhibit 1, Nye Report, ¶73 & Exhibit 2, Allen Report, ¶¶32-33]
- b. Dr. Nye testified in his deposition that it is “part and parcel with standard regression analysis [to find] a control period to estimate your model [...] that is representative of [the period you are looking at].” [Exhibit 44, Nye Deposition, 157:23-158:2] As a general proposition, I agree with that. Due to the heightened increase in overall market volatility that occurred at the beginning of the COVID-19 pandemic, Apache’s stock price movements (and other E&P stocks) around March 16, 2020 were more dramatic than they had been historically. Thus, the control period used in Dr. Nye’s event study model and my alternative event study model are not representative of the volatility on March 16, 2020. [Exhibit 4, Allen Surreply Report, ¶¶72-73]
- c. By not accounting for increased market volatility, both Dr. Nye’s event study model and my alternative event study model appear to find statistically significant reactions around this time period even when there is no new company-specific news. [Exhibit 2, Allen Report, ¶¶88-96, Exhibit 4, Allen Surreply Report, ¶¶69-71 & Exhibit 1, Nye Report, p. 280]

103. **Didn’t Dr. Nye control for this heightened market volatility?**

- a. Well, in his reply report he attempts to do so in response to my claim that Dr. Nye’s original event study model was not applicable to March 16, 2020 given the

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increased market volatility. Dr. Nye chooses a method from a paper by former NERA colleagues regarding event studies in periods of high market volatility (“NERA paper”). [Exhibit 55, NERA Paper, pp. 1-9]

- b. However, Dr. Nye does not fully adjust his event study model to account for the record-high market volatility on this day. The control periods he used in his adjustment, though more representative than the control period used in his original event study model, are still not representative of the heightened volatility on March 16, 2020.

104. What exactly does Dr. Nye do to attempt to control for the heightened market volatility around March 16, 2020?

- a. The NERA paper that Dr. Nye uses proposes four methods “to increase the accuracy of an event study in periods of increased market volatility.” [Exhibit 55, NERA Paper, p. 1] Dr. Nye only uses one of the methods. In particular, Dr. Nye uses the method that proposes moving the control period, the period used to measure the relationship between the company and the market and industry, closer to the event being tested in order to use a control period that has “similar” volatility to the event. [Exhibit 3, Nye Reply Report, ¶¶48-49]
- b. However, none of Dr. Nye’s alternative control periods actually has a volatility that is “similar” to the record-high volatility on March 16, 2020. All of Dr. Nye’s alternative control periods have a higher volatility than his original control period but not nearly as high as the date in question. Figure 11-a below shows how the average market volatility during all five of Dr. Nye’s alternative control periods is still substantially below the record-high market volatility on March 16. As shown in this Figure, as Dr. Nye’s alternative control period gets shorter, the market volatility during the control period gets closer to the volatility on March 16, 2020, and the p-value from the corresponding statistical test gets larger. [Exhibit 3, Nye

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Reply Report, ¶49, Exhibit 2, Allen Report, ¶¶88-96, Exhibit 4, Allen Surreply Report, ¶¶69-71]

Figure 11-a

Nye Control Periods for March 16, 2020 Alleged Corrective Disclosure					
Control Period	Control Period Dates	Market Volatility		Statistical Test (p-value)	
		During Control Period¹	On 3/16/20	Nye Model	Alternative Model
(1)	(2)	(3)	(4)	(5)	(6)
<i>Nye Report (Initial)</i>					
1 Year Prior to Event	3/14/19 - 3/13/20	17%	83%	0.0% *	0.0% *
<i>Nye Reply Report</i>					
Start March 2020 - 6 Months	3/2/20 - 8/31/20	35%	83%	0.1% *	0.4% *
Start March 2020 - 5 Months	3/2/20 - 7/31/20	37%	83%	0.3% *	0.7% *
Start March 2020 - 4 Months	3/2/20 - 6/30/20	40%	83%	0.3% *	0.8% *
Start March 2020 - 3 Months	3/2/20 - 5/29/20	43%	83%	0.7% *	1.9% *
Start March 2020 - 2 Months	3/2/20 - 4/30/20	48%	83%	2.0% *	5.3%
Notes and Sources:					
Data from Bloomberg L.P. and Dr. Nye's Turnover. "*" indicates that the price reaction is statistically significant at the 5% level. CBOE Volatility Index (VIX) is used to measure market volatility.					
¹ Calculated as the average volatility during the control period. Excludes event dates Dr. Nye excluded from his control period.					

105. **Okay, let's walk through this table. What does column 1 show?**

- a. Column 1 shows the control period Dr. Nye originally used in his first report, which is a year prior to March 16, 2020. It then shows the five alternative control periods Dr. Nye used in his reply report when attempting to adjust for the increased market volatility around this time.

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Nye Control Periods for March 16, 2020 Alleged Corrective Disclosure					
Control Period	Control Period Dates	Market Volatility		Statistical Test (p-value)	
		During Control Period¹	On 3/16/20	Nye Model	Alternative Model
(1)	(2)	(3)	(4)	(5)	(6)
<i>Nye Report (Initial)</i>					
1 Year Prior to Event	3/14/19 - 3/13/20	17%	83%	0.0% *	0.0% *
<i>Nye Reply Report</i>					
Start March 2020 - 6 Months	3/2/20 - 8/31/20	35%	83%	0.1% *	0.4% *
Start March 2020 - 5 Months	3/2/20 - 7/31/20	37%	83%	0.3% *	0.7% *
Start March 2020 - 4 Months	3/2/20 - 6/30/20	40%	83%	0.3% *	0.8% *
Start March 2020 - 3 Months	3/2/20 - 5/29/20	43%	83%	0.7% *	1.9% *
Start March 2020 - 2 Months	3/2/20 - 4/30/20	48%	83%	2.0% *	5.3%

Notes and Sources:
 Data from Bloomberg L.P. and Dr. Nye's Turnover. "*" indicates that the price reaction is statistically significant at the 5% level. CBOE Volatility Index (VIX) is used to measure market volatility.
¹ Calculated as the average volatility during the control period. Excludes event dates Dr. Nye excluded from his control period.

106. Can you walk us through columns 3 and 4?

- a. Column 3 shows the average market volatility during Dr. Nye's control periods. As the control period gets shorter and is more centered around March 16, the average market volatility increases.
- b. However, the average market volatility during each of the control periods is still substantially below the market volatility on March 16, 2020 (shown in column 4), even with the shortest control period of two months (see Figure 11-c). For example, Dr. Nye's original control period had an average market volatility of 17% and Dr. Nye's two-month alternative control period had an average market volatility of 48%, while the market volatility on March 16, 2020 was 83%.

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Nye Control Periods for March 16, 2020 Alleged Corrective Disclosure					
Control Period	Control Period Dates	Market Volatility		Statistical Test (p-value)	
		During Control Period¹	On 3/16/20	Nye Model	Alternative Model
(1)	(2)	(3)	(4)	(5)	(6)
<i>Nye Report (Initial)</i>					
1 Year Prior to Event	3/14/19 - 3/13/20	17%	83%	0.0% *	0.0% *
<i>Nye Reply Report</i>					
Start March 2020 - 6 Months	3/2/20 - 8/31/20	35%	83%	0.1% *	0.4% *
Start March 2020 - 5 Months	3/2/20 - 7/31/20	37%	83%	0.3% *	0.7% *
Start March 2020 - 4 Months	3/2/20 - 6/30/20	40%	83%	0.3% *	0.8% *
Start March 2020 - 3 Months	3/2/20 - 5/29/20	43%	83%	0.7% *	1.9% *
Start March 2020 - 2 Months	3/2/20 - 4/30/20	48%	83%	2.0% *	5.3%
Notes and Sources:					
Data from Bloomberg L.P. and Dr. Nye's Turnover. "*" indicates that the price reaction is statistically significant at the 5% level. CBOE Volatility Index (VIX) is used to measure market volatility.					
¹ Calculated as the average volatility during the control period. Excludes event dates Dr. Nye excluded from his control period.					

107. What about columns 5 and 6 and what is a p-value?

- a. Columns 5 and 6 are from the Nye Reply Report. Column 5 is the p-value of the price reaction on March 16, 2020 using the Nye event study model and column 6 is the p-value using my alternative event study model.
- b. The p-value indicates the chance that a price reaction of the same or larger magnitude would be observed given the range of normal stock price volatility. A p-value greater than 5% would mean that the price reaction is not statistically significant at the commonly used 5% significance level. [Exhibit 53, *Reference Guide on Statistics*, p. 250]
- c. Tellingly, as the control periods get shorter and the corresponding average volatilities get higher and closer to the volatility on March 16 (although still substantially lower), the p-value increases. In fact, the price reaction on March 16 using the control period with the highest average market volatility and my

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alternative event study model was not statistically significant (p-value is over 5%). See Figure 11-d below.

- d. Thus, Dr. Nye's adjustment is clearly not fully accounting for the record-high market volatility on March 16, 2020 but it nonetheless demonstrates that a full adjustment would yield no statistically significant reaction.

Figure 11-d

Nye Control Periods for March 16, 2020 Alleged Corrective Disclosure					
Control Period	Control Period Dates	Market Volatility		Statistical Test (p-value)	
		During Control Period¹	On 3/16/20	Nye Model	Alternative Model
(1)	(2)	(3)	(4)	(5)	(6)
<i>Nye Report (Initial)</i>					
1 Year Prior to Event	3/14/19 - 3/13/20	17%	83%	0.0% *	0.0% *
<i>Nye Reply Report</i>					
Start March 2020 - 6 Months	3/2/20 - 8/31/20	35%	83%	0.1% *	0.4% *
Start March 2020 - 5 Months	3/2/20 - 7/31/20	37%	83%	0.3% *	0.7% *
Start March 2020 - 4 Months	3/2/20 - 6/30/20	40%	83%	0.3% *	0.8% *
Start March 2020 - 3 Months	3/2/20 - 5/29/20	43%	83%	0.7% *	1.9% *
Start March 2020 - 2 Months	3/2/20 - 4/30/20	48%	83%	2.0% *	5.3%
Notes and Sources:					
Data from Bloomberg L.P. and Dr. Nye's Turnover. "*" indicates that the price reaction is statistically significant at the 5% level. CBOE Volatility Index (VIX) is used to measure market volatility.					
¹ Calculated as the average volatility during the control period. Excludes event dates Dr. Nye excluded from his control period.					

108. Does the NERA paper Dr. Nye relies on discuss any other methods of adjusting for increased market volatility?

- a. Yes, and Dr. Nye completely ignores the three other methods mentioned in the paper.
- b. Applying any of the three other methods outlined in the NERA paper yields no statistically significant price reaction following the March 16, 2020 alleged corrective disclosure. [Exhibit 4, Allen Surreply Report, ¶¶69, Exhibit 55, NERA Paper, p. 4 & Exhibit 3, Nye Reply Report, ¶¶48-49]

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Section 5: Alleged Corrective Disclosure #3: March 16, 2020

109. **Do the three other methods outlined in the NERA paper adjust for increased market volatility differently than the one method Dr. Nye uses?**

- a. Yes, the other three methods attempt to explicitly control for how the market volatility on each day affects Apache's stock price, while the method Dr. Nye uses does not consider daily variation in the market volatility. As a result, the three other methods attempt to explicitly control for the dramatic market volatility spike on the March 16, 2020 alleged corrective disclosure date. [Exhibit 55, NERA Paper, pp. 1-9 & Exhibit 4, Allen Surreply Report, ¶69]
- b. The first method assumes that Apache stock's volatility changes with the market volatility in the same way the Apache stock's expected return changes with the market return. [Exhibit 55, NERA Paper, p. 4]
- c. The second method also assumes that the volatility of Apache's stock changes with the market volatility, but this relationship is different from the way Apache's expected stock return changes with the market return. This method requires estimating the relationship between the implied volatility of the Apache stock and the implied market volatility during the control period. [Exhibit 55, NERA Paper, p. 4]
- d. The third method explicitly models how the Apache stock's excess return is affected jointly by the market return, the industry return, the market volatility, and Apache stock's past volatility. This model is called a generalized autoregressive conditional heteroskedasticity ("GARCH") model. [Exhibit 55, NERA Paper, p. 4]
- e. Applying any of these three other methods results in no statistically significant price reaction on March 16, 2020. [Exhibit 4, Allen Surreply Report, ¶69]

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110. **During his deposition, Dr. Nye seems to claim that the NERA paper’s approach using the GARCH model is “totally unsupported.” He testified that he has never seen “anybody ever using a GARCH model that has a log market volatility or implied volatility used in securities litigation or in academia.” What is your response to this? [Exhibit 44, Nye Deposition, 157:8-13]**

- a. Dr. Nye was the one who brought up this paper. I am merely responding to Dr. Nye’s attempt to adjust for market volatility using the methods outlined in the very paper he uses. [Exhibit 3, Nye Reply Report, ¶¶48-49]
- b. I find that the GARCH method and the VIX Index have been used in peer-reviewed academic papers on event studies. For example:
 - i. Fish, Gelbach, and Klick (2018) uses a GARCH model that includes the VIX Index to estimate stock price reactions in essentially the same way as the NERA paper (the only difference is the scale of the VIX Index used, and the scale of the VIX Index does not change the result that Apache’s stock price reaction following the March 16, 2020 alleged corrective disclosure is not statistically significant). [Exhibit 52, Fisch et al. Paper, p. 609 & Appendix pp. 7-9]
 - ii. Savickas (2003) uses the GARCH method in its event studies. [Exhibit 60, Savickas Paper, pp. 167-168]
 - iii. Baker (2016) uses the VIX Index in its event study. [Exhibit 47, Baker Paper, p. 1245]

111. **Did Dr. Nye analyze the March 16, 2020 alleged corrective disclosure using the GARCH model from the NERA paper?**

- a. Yes, during his deposition, Dr. Nye testified that he “did look” at the GARCH model from the NERA paper, and agreed that using this model, the price reaction

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on March 16, 2020 was “insignificant.” [Exhibit 44, Nye Deposition, 162:23-163:4]

112. **But in his deposition, Dr. Nye testified that “there’s no reason to run [the GARCH model from the NERA paper] because the first model [from the NERA paper] works.” What is your response to this? [Exhibit 44, Nye Deposition, 163:5-6]?**
- a. Dr. Nye’s claim is wrong. As explained above, the first model from the NERA paper as he has done it does not “work,” because he does not have a “representative control period” and thus fails to properly adjust for the heightened market volatility on March 16, 2020.
113. **Plaintiffs brought up the recent decision in *Delaware County Employees Retirement System, et al. v. Cabot Oil & Gas Corp., et al.*, Case 4:21-cv-02045 (Dkt. No. 173) to support their motion for class certification. What does this *Cabot* decision have to do with event studies in this case? [Exhibit 65, *Cabot* Decision, pp. 15-16 & Dkt No. 140, Plaintiff’s Notice of Supplemental Authority, pp. 1-5]?**
- a. I worked on the *Cabot* case, and similar to this case, one of the alleged corrective disclosures occurred during the COVID-19 pandemic period. However, unlike this case, the alleged corrective disclosure in the *Cabot* case occurred in June 2020, when the market volatility was higher than before the pandemic, but nowhere near the record-high market volatility on March 16, 2020. [Exhibit 65, *Cabot* Decision, p. 4]
- b. In the *Cabot* case, Plaintiffs’ expert, Dr. Feinstein, used a “Newey-West procedure” to control for the heightened market volatility when analyzing the June 2020 event. Although I found Dr. Feinstein’s method to be non-standard and the results themselves showed that the method was unreliable, the Court credited Dr. Feinstein’s method. Applying Dr. Feinstein’s method to this case yields no

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Section 5: Alleged Corrective Disclosure #3: March 16, 2020

statistically significant price reaction following the March 16, 2020 alleged corrective disclosure. [Exhibit 65, *Cabot* Decision, pp. 15-16]

- c. Note that in the *Cabot* case, I proposed a different event study method that used Dr. Feinstein’s “Covid period” as the control period, which is similar to the first method from the NERA paper used by Dr. Nye. I found that this alternative control period in the *Cabot* case was representative of the increased volatility on the June 2020 event date, unlike Dr. Nye’s application of the NERA paper’s first method, which relies on control periods that are not representative of the spiked market volatility on March 16, 2020.

114. Is there a consensus or standard method to use in event studies to control for the heightened market volatility on March 16, 2020?

- a. I find that as of now, there is no consensus or standard method to use in event studies to control for sudden market volatility changes such as the one that occurred around March 16, 2020. As a recent study published earlier this year in the *Journal of Corporate Finance* by Elsas and Schoch explains: “the solution [to finding a suitable event study], is not so obvious” and “[l]ittle is known about statistically suitable event study design” in cases of sudden market volatility changes. [Exhibit 50, Elsas and Schoch Paper, p. 1]
- b. The Elsas and Schoch paper further warns that the “estimation is severely biased when the calibration [or control period] and event period occur in different volatility regimes.” [Exhibit 50, Elsas and Schoch Paper, p. 1] Dr. Nye’s attempt to use the NERA paper’s first method to account for this issue fails. Thus, all of the event study methods that actually control for the market volatility changes on March 16, 2020 that Plaintiffs and Dr. Nye cite yield no statistically significant price reaction following the March 16, 2020 alleged corrective disclosure. [Exhibit 4, Allen Surreply Report, ¶74]

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Section 5: Alleged Corrective Disclosure #3: March 16, 2020

Reason #6

115. **Let's discuss your sixth reason. What is it?**

- a. It appears that Plaintiffs may have chosen March 16, 2020 to be an alleged corrective disclosure date not because they found something actually corrective of the alleged misrepresentations on this date, but instead because there was a large drop in Apache's stock price on this date.
- b. This was a particularly volatile day for the market with dramatic changes in stock prices that occurred as the beginning of the COVID-19 pandemic unfolded. Although there was a large price movement on this day, there was no Apache-specific news. In fact, according to Dr. Nye, there were over 30 analysts covering the Company around this time period, but not one issued a Company-specific report on Apache on this day. [Exhibit 2, Allen Report, ¶¶88-96, Exhibit 4, Allen Surreply Report, ¶¶69-71, Exhibit 40, March 18, 2020 *USA News* Article, p. 2, Exhibit 39, March 17, 2020 *Dow Jones Institutional News* Article, p. 1 & Exhibit 1, Nye Report, pp. 113-115, 129]

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Section 6: Big Picture Analysis

Big Picture Analysis

116. Did you only analyze each alleged corrective disclosure during the Focus Period to arrive at your conclusions?

- a. No. I also did a big picture analysis, which included an analysis of what changed (if anything) about the market's view on Alpine High's oil and wet gas vs dry gas reserves during the Focus Period, an analysis of Apache's stock price relative to the E&P industry, and an analysis of the effect of changing commodity prices on Apache's decisions for Alpine High. [Exhibit 2, Allen Report, ¶¶97-126]

117. What did you find in this big picture analysis?

- a. I found that this big picture analysis is consistent with the lack of a link between any of the alleged misrepresentations made during the alleged Class Period and Apache's stock price movement during the Focus Period.
 - i. I performed a systematic review of analyst reports and found that analysts did not change their view about Alpine High's oil and wet gas vs dry gas reserves during the Focus Period. [Exhibit 2, Allen Report, ¶¶100-101 & Exhibit 4, Allen Surreply Report, ¶6]
 - ii. I found that contrary to Plaintiffs' claim that "when the truth regarding Defendants' fraud emerged [...] Apache's stock price was decimated" and had "an astonishing decline of 93% from its high during the Class Period," Apache's stock price moved in-line with the E&P industry during the Focus Period. [Dkt. No. 65, Complaint, ¶2] In other words, Plaintiffs are correct that Apache's stock price fell, but the overall E&P industry also dropped dramatically during the Focus Period. [Exhibit 2, Allen Report, ¶¶103-104 & Exhibit 4, Allen Surreply Report, ¶¶18, 76-77]
 - iii. I found that when commodity prices recovered after the Focus Period ended, Apache resumed its previously curtailed production and drilling at

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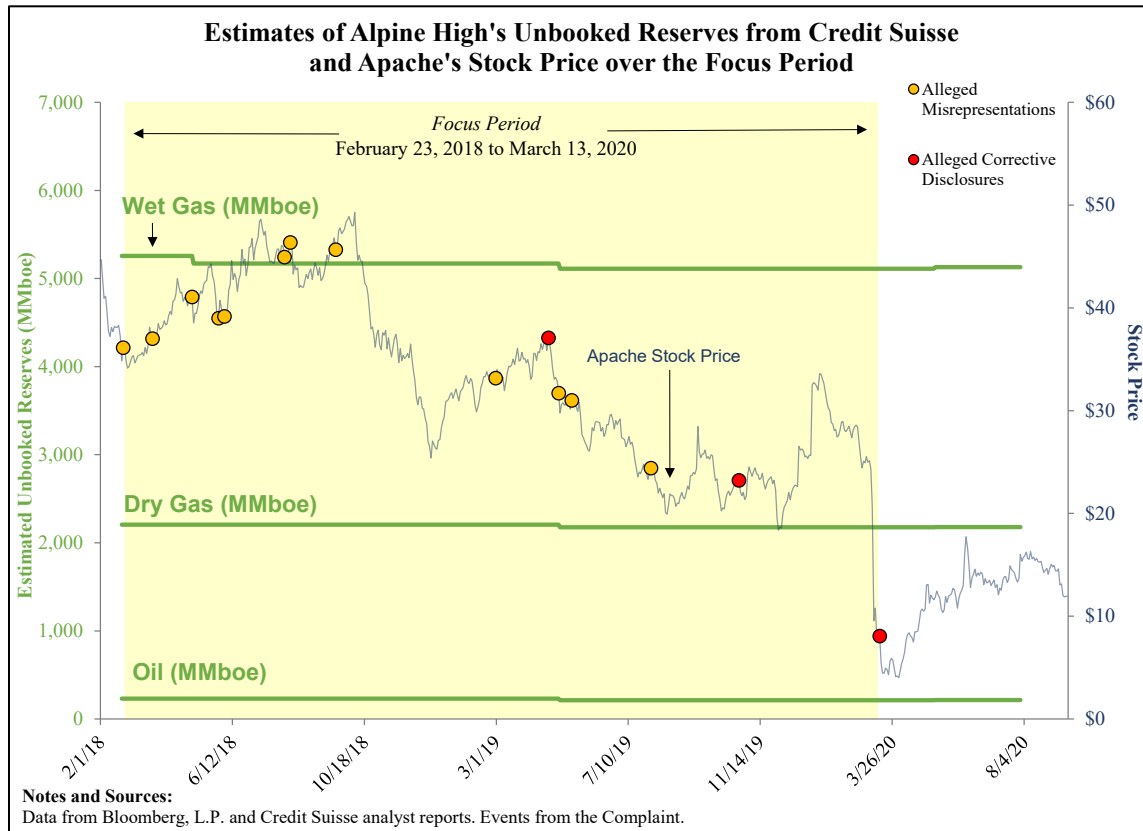
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Alpine High, further demonstrating that the decisions about production and drilling at Alpine High were driven by changing commodity prices. [Exhibit 2, Allen Report, ¶¶120-125, & Exhibit 4, Allen Surreply Report, ¶78]

118. You mentioned that you found that the market did not change its view about Alpine High’s oil and wet gas vs dry gas reserves or its mix. What did you base that conclusion on?

- a. One way I arrived at that conclusion is that analysts’ estimates of the quantity of oil and wet gas reserves at Alpine High and its mix were essentially unchanged during the Focus Period. [Exhibit 2, Allen Report, ¶¶5,98 & Exhibit 4, Allen Surreply Report, ¶6]
- b. For example, analysts at Credit Suisse estimated Alpine High’s “unbooked reserves” of oil, wet gas, and dry gas during the Focus Period to reflect the quantity of reserves that are possible and probable, but not proven. [Exhibit 2, Allen Report, footnote 112 & Exhibit 4, Allen Surreply Report, footnote 81]
- c. As summarized in Figure 12 below, Credit Suisse essentially did not change their estimates of Alpine High’s “unbooked reserves” of oil, wet gas, and dry gas or its mix after any of the alleged misrepresentations or alleged corrective disclosures during the Focus Period. In Figure 12 below, one can see that the green lines, which represent Credit Suisse’s estimates of oil, wet gas, and dry gas “unbooked reserves” at Alpine High remain relatively unchanged, while Apache’s stock price (in blue) decreases over the Focus Period. [Exhibit 2, Allen Report, ¶98 & Exhibit 4, Allen Surreply Report, ¶7]

*In re Apache Corp. Securities Litigation***Class Certification Hearing Direct Testimony of Lucy P. Allen****Section 6: Big Picture Analysis****Figure 12**

119. **Did you only look at Credit Suisse analysts to conclude that the market did not change its view about Alpine High's oil and wet gas vs. dry gas reserves or its mix?**

- a. No. I conducted a systematic review of all analyst reports during the Focus Period and found that analysts repeatedly characterized Alpine High as a *gas-weighted, NGL-rich* play during the Focus Period. [Exhibit 2, Allen Report, ¶100-102 & Exhibit 4, Allen Surreply Report, ¶8]
- b. No analysts indicated in any way that they changed their understanding about Alpine High's quantity of wet gas and oil reserves or its oil and wet gas vs. dry

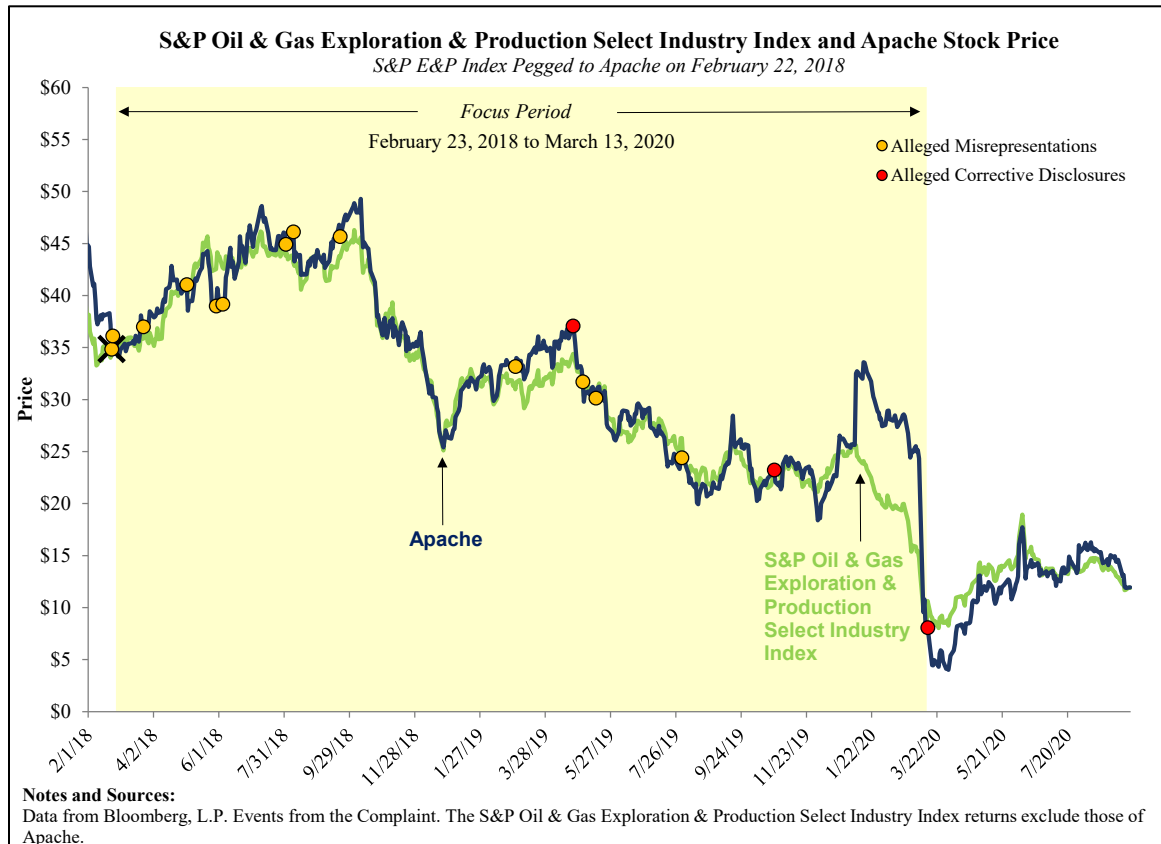
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gas reserve mix during the Focus Period. [Exhibit 2, Allen Report, ¶¶100-101 & Exhibit 4, Allen Surreply Report, ¶8]

120. **Could you give me some examples of analysts that repeatedly characterized Alpine High as gas-weighted and NGL-rich during the Focus Period?**
- a. For example, during the Focus Period, analysts at Bank of America consistently described Alpine High's as a "gas play," JP Morgan analysts repeatedly commented on the "gassier mix" of Alpine High, and Morgan Stanley and MUFG analysts repeatedly characterized Alpine High as "NGL-rich." [Exhibit 2, Allen Report, ¶101]
121. **Did Dr. Nye have any response to your analysis of the market's view about Alpine High's reserves or its mix?**
- a. No, he did not and he does not show anything to the contrary. He testified that he has not "analyzed all the analyst reports and how their estimates of reserves and mix changed over the class period." [Exhibit 44, Nye Deposition, 165:20-166:4]
122. **So, Dr. Nye did not find any analyst that changed their view about Alpine High's reserves or its mix, right?**
- a. That's correct. [Exhibit 44, Nye Deposition, 165:20-166:4]
123. **You mentioned you compared Apache's stock with the E&P industry, right?**
- a. Yes. Apache's stock moved in-line with the S&P Oil & Gas Exploration & Production Select Industry Index during the Focus Period (shown in Figure 13 below). This is the industry index I used in my alternative event study. [Exhibit 2, Allen Report, ¶¶103-105 & Exhibit 4, Allen Surreply Report, ¶¶76-77]

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124. **Why did you compare Apache’s stock to the S&P Oil & Gas Exploration & Production Select Industry Index? Didn’t Dr. Nye claim this analysis was irrelevant?**

- a. Dr. Nye did claim this analysis was irrelevant. [Exhibit 3, Nye Reply Report, ¶¶54-56] However, this analysis was directly responding to Plaintiffs’ claim that “when the truth regarding Defendants’ fraud emerged [...] Apache’s stock price was decimated” and had “an astonishing decline of 93% from its high during the Class Period,” as a result of the “truth emerging.” [Dkt. No. 65, Complaint, ¶2]

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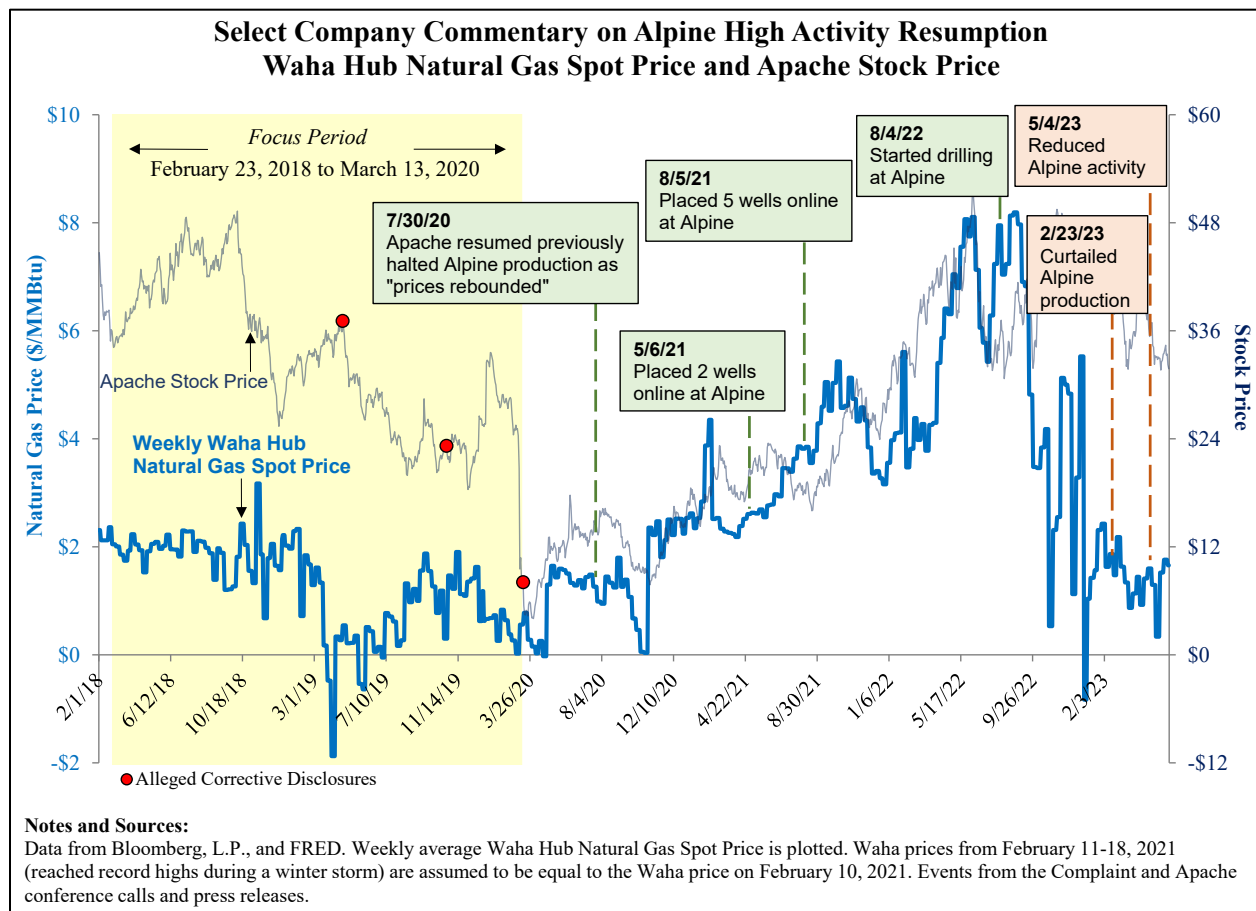
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- b. My analysis showed that contrary to this claim by Plaintiffs, Apache's stock price moved in-line with the industry index. [Exhibit 2, Allen Report, ¶¶103-105 & Exhibit 4, Allen Surreply Report, ¶¶76-77]
125. **Did you compare Apache's stock to any other stocks or indices?**
- a. Yes. I compared Apache's stock to Cimarex Energy Co. ("Cimarex") and found that Apache's stock price moved in-line with Cimarex. Cimarex was another E&P company that was heavily exposed to Waha Hub natural gas and NGL prices. [Exhibit 2, Allen Report, ¶119 & Exhibit 4, Allen Surreply Report, ¶77]
126. **Does the fact that Apache's stock moved in-line with Cimarex's stock over the Focus Period tell you anything about the alleged corrective disclosures?**
- a. Not particularly. This is to get a general understanding of what was happening during the Focus Period and to respond to Plaintiffs claim that "when the truth regarding Defendants' fraud emerged [...] Apache's stock price was decimated" and had "an astonishing decline of 93% from its high during the Class Period," as a result of the "truth emerging." [Dkt. No. 65, Complaint, ¶2].
127. **You also discuss that Apache resumed production and drilling at Alpine High after the Focus Period, right?**
- a. Yes, that's correct. [Exhibit 2, Allen Report, ¶¶120-125, Exhibit 4, Allen Surreply Report, ¶78, Exhibit 42, July 30, 2020 *Apache Earnings Conference Call*, p. 4, Exhibit 41, July 29, 2020 *Apache Press Release*, p. 5 & Exhibit 43, May 6, 2021 *Apache Earnings Conference Call*, p. 4]
128. **Why is the fact that Apache resumed production and drilling at Alpine High after the Focus Period relevant to your analysis?**
- a. It is additional evidence that directly shows that decisions about production and drilling at Alpine High were driven by deteriorating commodity prices during the

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Focus Period, and not by the revelation of any new information regarding the quantity of reserves or its mix.

- b. As shown in Figure 15 below, when Waha Hub natural gas prices recovered after the Focus Period, Apache resumed production and drilling at Alpine High. Analyst commentary also links the drilling revamp at Alpine High to the recovery of commodity prices. [Exhibit 2, Allen Report, ¶¶120-125 & Exhibit 4, Allen Surreply Report, ¶78]

Figure 14

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129. Did you analyze if there was inflation in Apache's stock price before the Focus Period started and/or whether this inflation was still in Apache's stock price when the Focus Period started?

- a. No, that was not my assignment. My assignment was to analyze whether Apache's stock price was impacted during the Focus Period as a result of the alleged misrepresentations. I analyzed whether Apache's stock price went up during the Focus Period when the alleged misrepresentations were made and I analyzed whether Apache's stock price went down during the Focus Period as a result of information allegedly corrective of the alleged misrepresentations during the alleged Class Period.
- b. I found that the alleged misrepresentations made during the Focus Period did not cause an increase in Apache's stock price and thus did not create any alleged inflation in the stock price. Dr. Nye himself testified that the alleged misrepresentations made during the Focus Period "would not be expected to influence Apache's stock price on those dates." [Exhibit 2, Allen Report, ¶¶36-42, Exhibit 4, Allen Surreply Report, ¶¶16-21 & Exhibit 44, Nye Deposition, 87:9-99:11]
- c. I showed, through the numerous analyses that I have just testified to, that any alleged inflation from before the Focus Period did not come out of Apache's stock price during the Focus Period, including on any of the alleged corrective disclosures, thus severing the link between any of the alleged misrepresentations during the alleged Class Period and Apache's stock price movement during the Focus Period. [Exhibit 2, Allen Report, ¶¶3-4 & Exhibit 4, Allen Surreply Report, ¶¶17-21]

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130. **If the alleged inflation did not come out of Apache's stock price during the Focus Period, what does that tell you about the inflation before and after the Focus Period?**

- a. Since the alleged inflation (if any) did not come out of Apache's stock price during the Focus Period, then either:
 - i. the pre-Focus Period alleged misrepresentations had no impact at all;
 - ii. the alleged inflation from the pre-Focus Period alleged misrepresentations came out of Apache's stock price before the Focus Period, meaning that the alleged misrepresentations had no impact on the price of Apache's stock during the Focus Period; or
 - iii. the alleged inflation was still in the stock after the alleged Class Period and is therefore not relevant to Plaintiffs' allegations in this case. [Exhibit 4, Allen Surreply Report, ¶19]

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Section 7: Exhibit List

Reports

1. Nye Report
2. Allen Report
3. Nye Reply Report
4. Allen Surreply Report

Apache Source Documents

5. January 6, 2017 *Houston Chronicle* Article
6. February 24, 2017 Bank of America Report
7. February 22, 2018 Bank of America Report
8. August 9, 2018 Bank of America Report
9. January 24, 2019 Credit Suisse Report
10. February 8, 2019 Bank of America Report
11. March 25, 2019 *Dow Jones* Article
12. May 2, 2019 MUFG Bank Report
13. April 23, 2019 *Apache Press Release*
14. April 23, 2019 Macquarie Report
15. April 23, 2019 Stephens Report
16. April 23, 2019 Scotiabank Report
17. April 23, 2019 Capital One Report
18. April 26, 2019 Cowen Report
19. April 28, 2019 Barclays Report
20. September 23, 2019 SunTrust Report
21. October 7, 2019 Cowen Report
22. October 14, 2019 JP Morgan Report
23. October 18, 2019 Bank of America Report
24. October 21, 2019 Barclays Report
25. October 25, 2019 *Bloomberg News* Article
26. October 25, 2019 RBC Capital Report
27. October 25, 2019 Credit Suisse Report
28. October 25, 2019 SunTrust Report
29. October 29, 2019 Morgan Stanley Report
30. October 30, 2019 RBC Capital Report
31. October 31, 2019 Credit Suisse Report

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- 32. December 2, 2019 *Wall Street Journal* Article
- 33. February 26, 2020 *Earnings Release*
- 34. March 2, 2020 JP Morgan Report
- 35. March 13, 2020, Proclamation of National Emergency
- 36. March 16, 2020 *NPR* Article
- 37. March 16, 2020 *Seeking Alpha* Article
- 38. March 16, 2020 Susquehanna Report
- 39. March 17, 2020 *Dow Jones Institutional News* Article
- 40. March 18, 2020 *USA News* Article
- 41. July 29, 2020 *Apache Press Release*
- 42. July 30, 2020 *Apache Earnings Conference Call*
- 43. May 6, 2021 *Apache Earnings Conference Call*

Depositions

- 44. Nye Deposition

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- 46. Allen, Lucy and Baez, Jorge, “The Short-Term Effect of Goodwill Impairment Announcements on Companies’ Stock Prices,” *International Journal of Business Accounting and Finance*, (Vol. 14(2), 2020), pp. 59-68 (“Allen and Baez Paper”)
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- 50. Elsas, Ralf and Schoch, Daniela S., “Robust inference in single firm/single event analyses,” *Journal of Corporate Finance*, (2023), pp. 1-26 (“Elsas and Schoch Paper”)
- 51. Fanelli, Daniele, “Negative results are disappearing from most disciplines and countries,” (2012), pp. 891-904 (“Fanelli Paper”)

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Section 7: Exhibit List

52. Fisch, Jill E., et al., “Appendix Material for After Halliburton: Event Studies and Their Role in Federal Securities Fraud Litigation,” *Texas Law Review*, (Vol. 3, 2018), pp. 1-14 (“Fisch et al. Paper”)
53. Freedman, David A., and David H. Kaye, “Reference Guide on Statistics,” *Reference Manual on Scientific Evidence* (Washington, D.C.: Federal Judicial Center, 3rd ed., 2011) (“Reference Guide on Statistics”)
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62. Zhang, X. Frank, “Information Uncertainty and Stock Returns,” *The Journal of Finance*, (Vol. 61, 2006), pp. 105–136 (“Zhang Paper”)

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63. *Barrie v. Intervoice-Brite, Inc.*, 2006 U.S. Dist. LEXIS 69299 (N.D. Tex. Sept. 25, 2006) (“Barrie Decision”)
64. *Bricklayers & Trowel Trades International Pension Fund v. Credit Suisse Securities (USA) LLC*, 752 F.3d 82, 92 (1st Cir. 2014) (“Bricklayers Decision”)
65. *Delaware County Employees Retirement System, et al. v. Cabot Oil & Gas Corp., et al.*, Case 4:21-cv-02045 (Dkt. No. 173) (“Cabot Decision”)

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66. *Erica P. John Fund, Inc. v. Halliburton Company*, No. 3:02-CV-1152-M (N.D. Tex. July 25, 2015) ("*Halliburton Decision*")
67. *In Re TECO Energy Inc. Securities Litigation*, 2006 U.S. Dist. LEXIS 18101 (M.D. Fla. March 30, 2006) ("*In Re TECO Decision*")
68. *John ROONEY, Individually and on Behalf of All Others Similarly Situated, v. EZCORP, INC. and Mark E. Kuchenrither*, Cause No.: A-15-CA-00608-SS, dated February 19, 2019 ("*EZCORP Decision*")
69. *Ramirez v. Exxon Mobil Corp.*, Civil Action 3:16-CV-03111-K (N.D. Tex. August 21, 2023) ("*Exxon Decision*")

Miscellaneous

70. Expert Report of Lucy P. Allen in *Jacob J. Beckel v. Fagron Holdings USA, LLC* ("*Allen Fagron Report*")
71. "CBOE VIX Index," *CBOE*. ("*CBOE Article*")
72. "Shut-in," *Merriam Webster*. ("*Merriam Webster*")
73. "What is VIX and What Does it Measure?" *S&P Dow Jones Indices* ("*S&P Dow Jones Indices Article*")